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WAYS TO Better Hearing

by Lowell Brentano

DIAGRAMS BY RALPH GRAETER

"The wise pretend to make it clear
'Tis no great loss to lose an ear.
Why are we then, so fond of two,
When, by experience, one would do?"
JONATHAN SWIFT, 1729

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Introduction

Into the life of every hard-of-hearing person there comes a zero hour—a tragic occasion when he stops using the threadbare alibi of his friends' bad voices and his relatives' mumbling, and honestly admits that his own ears are at fault. Like the woman who discovers her first gray hair and shivers over the approach of old age, the victim, recognizing his own inadequacy, flinches before the unknown. But if he does something about it, instead of brooding and pitying himself, this dark hour can be the turning point in his career. What was apparently the end is really the beginning. For no one can help the hard-of-hearing sufferer, until he acknowledges his own need of help!

Unfortunately, many years can elapse—and usually do—before we stop deceiving ourselves. I was six when scarlet fever damaged my ear drums, and forty-three when my wife literally sandbagged me into the purchase of a hearing aid. In the intervening thirty-seven years I was a charter member of the I-don't-quite-hear-you club. I had my ears probed and examined, my adenoids and tonsils out, my sinuses operated upon, under the foolish delusion that some medical magic would make me whole again. Instead, I went steadily from bad to worse, until I sickened of my own stubbornness and concentrated on how to make the most of whatever hearing I still retained.

But this is not to be construed as a sob solo; on the contrary, in a certain sense it is a success story. The only justification for writing it in the first person is that, as an average man with a hearing loss of approximately 70%, I have managed to hold my own with those who can detect a watch ticking at ten paces. I have a satisfactory share of the things men strive to obtain. I am happily married. After being financially "liquidated" in 1933, I earn a comfortable living. I have a large number of business associates and casual, happy-go-lucky friends and a heart-warming inner circle of loyal and stimulating "intimates," whose affection has been tested by time. I lead an active and enjoyable life. And—in the words of the advertising copy writers—so far as your ears are concerned, you, too, can do and have the same.

I speak of these things not boastfully but to establish my qualifications for writing about the intensely personal problem of diminished hearing capacity—and to give testimony that a hearing loss is a handicap that can be overcome.

I would be an unrealistic Pollyanna if I were to try to deny it is a cross, or to describe it as an inconsequential trifle which should be met by some sort of mind-over-matter technique. Nor do I have any patience with well-meaning persons who attempt to minimize the matter by pointing out what heavier burdens there are to bear. That is scant comfort.

Hearing loss, in my opinion, is a definite handicap. But its severity depends very largely on how it is handled. The problems which it brings, if intelligently met, can be no more than intermittent inconveniences. Indeed, the condition may bring compensating, positive advantages. Occasionally, it is a stimulus to action. It may lead a person who otherwise might dawdle through life, to take stock of himself and to focus his activities.

I am not attempting an all-embracing work—an exhaustive description of the phenomena of sound, the detailed anatomy of the ear, the physiology of hearing, the various ills to which the ear is subject. I am not writing for the physicist or the physician. Rather I want to provide for the average man or woman who has sustained a definite loss of hearing, the simple and practical facts that will help him to keep this loss from being a burden. Occasionally, therefore, to drive home an important point or for the sake of clarity, I have repeated myself.

If I were one of a very small group of people, I probably should not take the trouble to write down what I shall have to say in this book, but the hard-of-hearing are legion. Estimates of the number of people in the United States with subnormal hearing range from five million to twenty million. This wide range is due in large part to different standards as to what constitutes being "hard-of-hearing."

Hearing losses vary. Some persons may be quite deaf only to high-pitched tones. In others the deficiency may extend into the middle register. Not only the range of loss but its severity differs from person to person. For clinical purposes—for sifting out individuals whose impairment may become markedly worse in time, if remedial measures are not taken—a scientist may set a very high standard in defining subnormal hearing. In contrast, Army examiners, in determining whether to accept or reject draftees, might set standards not so rigid. So it can be seen that different criteria established by different investigators will result in widely varying statistics.

Loss of hearing for tones outside the range involved in speech is obviously not crippling and is important only insofar as it may be a symptom of a progressive deterioration that may in time encroach within that range. As people grow older, there is often less ability to hear very high-pitched sounds. In fact, this inability to distinguish high-pitched tones is so general among older people that it may be considered normal.

If we limit our consideration to speech tones, it is probable there are approximately 15,000,000 adults in the United States with diminished hearing; about 5,000,000 are severely enough affected to be classified as handicapped, unless they take steps to remedy their condition. These figures do not include an estimated 2,000,000 to 3,000,000 school children with defective ears.

The proportion of people with this impairment in our population is likely to be increased by the experiences of the war. In war large numbers of men are exposed to greater bodily hazards than they would meet in times of peace. The concussion of guns and the explosion of bombs and shells put a tremendous strain upon the hearing apparatus. In addition, modern

mechanized war creates new kinds of aural shocks—the continuous high level of noise inside tanks, the roar of aircraft motors, abrupt pressure changes (to which our ears are especially sensitive) accompanying rapid ascents and dives in planes. And millions of civilians, in war industry, are exposed to the constant or intermittent racket of factory and shipyard.

Lessened hearing ability, then, is a problem for a great many people, and it becomes most important to give them information which will help them overcome the condition.

For what a hard-of-hearing person particularly needs is information. Good counsel is especially necessary in these cases, because much of what can be done, must be done by the individual himself.

He cannot be simply a passive patient, ministered to by someone else. The problem is peculiarly his for solution.

Acknowledgments

Today, an author's acknowledgments have come to be accepted as a conventional expression of thanks. But here, my appreciation transcends any stereotyped listing of credits, for a book of this character cannot be a one-man job. The problems involved in hearing loss cover an extensive field. They necessitate a familiarity with such subjects as physiology, psychology, physics, mechanics, the Armed Services, children's education, and vocational planning. And, had I not been able to avail myself of expert counsel, I fear that the results would have been most inadequate.

I am specially indebted to my friend Stewart Schackne, who placed his extensive knowledge of the hearing aid field at my disposal, and by his invaluable advice clarified every doubtful point; to my friend Margaret R. Weiss, for her constructive suggestions and skillful editorial assistance; and to my wife, Frances Brentano, who instigated my writing the book, patiently read and reread every page of the manuscript, and helped me revise it.

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PART ONE

1 "Louder—Please"

Sometimes loss of hearing comes suddenly, caused by some mechanical force, such as a blow on the head or a nearby explosion, or by an attack of some acute disease, such as scarlet fever or meningitis. Much more often it comes slowly, the result of a gradual accumulation of damage to the ears. Such damage may come from a series of diseases, major and minor, each attack of which leaves its scars upon the hearing apparatus. Or it may result from repeated mechanical "insults" to the ear—frequent exposure to a high volume of noise, especially in a closed place, such as might be encountered in a machine shop, in motor testing, in riveting, in pneumatic drilling. "Boiler-maker's deafness," for example, is a recognized occupational injury. Many taxi-drivers in large cities become partially deaf in their left ears, both because of the greater exposure of that side of the head to the open window, and to the noises of traffic and the high-pitched sound of the wind blowing past.

Loss of hearing is most commonly caused by the subacute infections of nose and throat, broadly described as "colds," "catarrh" and "sinus trouble." The nose, throat, sinuses and ears are all connecting cavities in the bony structure of the head. A certain number of germs exist in them all the time. If conditions favor their breeding, they multiply in such numbers as to produce inflammation, which obviously may damage the ear.

Loss of hearing may also occur simply with age, through the accumulated wear-and-tear of living. The changes that take place as we grow older, such as hardening of the minute blood vessels which nourish the ear, may cause it to function less well than it did when we were in the heyday of youth.

The impairment, at the start, creeps up on one gradually and insidiously. Indeed, its encroachment is frequently so imperceptible that a warning to act comes too late. If you have any hearing trouble, this is the first thing you should take into account in appraising your situation. In those cases where deterioration increases slowly, you do not perceive the minute degrees by which your precious faculty is slipping away, any more than you can see the movement of the mechanisms of a clock. You are no more conscious of the change from week to week than you are of alterations in your appearance; it is only when you look at a photograph of yourself made a number of years ago, that you see the changes that have come as you have grown older.

Since acoustic loss is often gradual, a considerable drop can take place before you are aware of its extent. The sounds you do not get (the tick of a watch, the steam hissing in a tea kettle, the creak of a door) are not important enough to be missed. But conversation—which naturally receives the bulk of our attention—is carried on in a noticeably louder tone than is actually necessary, enabling the person with only a trivial defect to follow it. Consequently, your hearing can slip rather badly before you realize something is wrong.

When the deficiency is detected at an early stage, its cause may be determined and it may be possible to adopt precautions which will arrest or at least retard its progress. You must always be on guard; for if, through unawareness, you fail to take such steps in time—even though future deterioration is prevented—a significant part of your hearing capacity may already have vanished. It is like putting out a fire after it has destroyed half the rooms of a house, instead of quenching it when only a pair of curtains were blazing.

This is why public health workers and others interested in the preservation of hearing constantly recommend periodic tests of school children. By dealing with the young, they better the chances of uncovering difficulties while they are still slight and of taking action to conserve the hearing residue while a substantial part still remains undamaged.

Unfortunately in these cases, remedial measures are often "too little and too late," which also means that the habits and attitudes associated with unsatisfactory hearing have had time to become well established. And you may acquire these habits quite unconsciously. They are as great an impediment as approaching deafness. The longer they have persisted, the more they have been practiced, the more difficult it becomes to correct them.

You may first notice your lowered acuity when another person calls attention to some relatively faint sound. "Listen," a member of the family nudges you, "is there a faucet open somewhere? I hear water dripping." Or a friend with whom you are out walking asks, "Do you know what kind of bird that is? Hasn't he a beautiful song?" But you have probably heard nothing. Try as you will, you cannot hear a dripping faucet or a singing bird.

Your first clue that your ears are not so sharp as they once were, may come when you find you are having trouble following dialogue that other people seem to hear without difficulty. Such an experience is most likely to occur when several people are carrying on a conversation. If you are addressed directly, the

loudness of the speaker's voice, the expression his face, and the fact that he is replying to some comment you have made, will enable you to know what he has said. You forget that you have not heard with complete clarity. But in group conversation, a person may talk when you are not looking at him, or different members of the group may speak at different distances from you, and there may be sudden shifts in the topic of discussion. Under these circumstances, your apparent dullness becomes uncomfortably noticeable.

Another symptom of weakened hearing is seen in people who ask others to repeat something they have said. While it is true that too many have feeble voices or enunciate poorly or talk in low tones, most people habitually speak with sufficient volume for the person with normal hearing to understand what they say.

If, therefore, you have experienced any of these embarrassments—failure to hear a faint sound heard by someone else, difficulty in following group conversation, or frequent requests for repetition—you have grounds for suspicion that, at least by popular standards, you are hard of hearing.

However, these experiences alone are not scientific proof of your condition. They are grounds for suspicion, rather than infallible tests. After all, other people sometimes miss sounds or ask to have statements repeated. You find yourself up against the fact that hearing is a subjective sensation. It goes on "inside a person." Suppose, for example, you and I both hear a bell. How can I know whether I have heard it as loudly as you? I cannot get into your head to make a comparison.

If, therefore, you have cause to distrust your keenness of perception, there are some simple objective tests that you can try on yourself. Take a watch and a yardstick or a piece of string. Have a friend hold the watch close to your ear, while you sit with eyes closed in a reasonably quiet room. The tester should then move the watch farther and farther away until you no longer hear it. Then measure the distance from your ear to the point where you can no longer distinguish the ticking. The experiment should be repeated several times for each ear. On some trials, while you are claiming that you can hear the watch plainly, the tester should put it behind his back, thus cutting off the sound suddenly instead of reducing it gradually by slow withdrawal. This will reveal whether you actually hear the ticking or only imagine you do so.

Or you can ask a friend to listen to a radio with you. Turn the volume progressively lower and try it from the same distance as he does. In this way, you can tell whether the sound ceases for you while it continues for him. Of course, if you happen to choose an assistant who has poor hearing himself, such an experiment is worthless. But if carried out at different times with different individuals, you can be fairly sure that you are measuring your hearing against normal standards.

2 True Confession

Although experiments of this kind may help to confirm or relieve your fears, they can scarcely be regarded as precise. The only truly accurate measurement of hearing is an audiometer test. An audiometer is an electrical instrument producing relatively pure tones by the employment of vacuum tubes. The tones can be controlled both in pitch and volume by the operator, and the variations are indicated by dial readings. Your family doctor is unlikely to have this instrument, but he can refer you to an otologist—an ear specialist—to a hospital, or to a local chapter of the League for the Hard of Hearing that possesses the equipment.

In any event, whether you merely suspect that your hearing is slipping or are entirely convinced that it is, a prompt visit to a physician is an absolute must. If you know of an otologist of good reputation in your community, you may visit him directly. If not, go to your general practitioner and have him recommend an ear specialist. Do not be content with an examination and advice from a general practitioner alone; insist on consulting an otologist. In fact, in all probability, your family doctor will of his own accord shove you into the arms of an expert. For the ear is so complex an organ, its inner parts are so small and so inaccessibly embedded in the skull, that special skill and instruments are required for full examination. Moreover, the subjects of sound and hearing are so vast that only a man who devotes himself entirely to them can serve you adequately.

I cannot overemphasize the importance of an immediate otological examination. The temptations to delay are subtle. Being hard of hearing does not hurt like a toothache or an inflamed appendix, so there is no spur of pain to drive you to the doctor. It is so easy to tell yourself that your difficulty is slight, that you are getting along all right. You may stay away from a doctor because you fear you will be hurt, or because you sense that what you apprehend is true, and you do not want to have the truth put solidly before you.

Unless your ears are inflamed, an ordinary otological examination is an entirely painless procedure. And as for your reluctance to learn the possible truth, better the cold-water shock of fact than the gnawing canker of doubt. The consequences of procrastination will always be more than those of immediate action.

Even an unfavorable verdict, which at first seems to cut the ground from under your feet, should have the psychological advantage of compelling you to face the facts. Almost invariably, hard-of-hearing "victims"

have a stubborn reluctance to acknowledge their condition. We are willing to be considered liars, blockheads, or fools; we will go to any length to put on an act to convince others that we are following their every syllable, rather than admit our weakness even to ourselves.

Our doubts may be based, in part, on perfectly solid ground. Since hearing slips gradually, and since the subjective perception of sound makes it impossible for the individual to compare his sensibility with that of other people, he may actually be ignorant of the extent of his trouble. When the impairment has become a definite handicap, it leads to errors that should make the person instantly aware something is wrong. But he is held back from the admission by certain psychological blocks, and still persists in denying that anything is the matter with his ears.

There are several reasons for this seemingly irrational behavior. For one thing, there is a confusion in our language and in our popular concepts between being "deaf" and being "hard-of-hearing." The average person is not always clear in his mind as to just what the phrase means. He is likely to describe anyone who has noticeable difficulty in hearing as "deaf." Even doctors are apt to use the word deaf to cover all degrees of aural impairment. But the hard-of-hearing person maintains that he is not deaf because *he does hear some things.*

In this connection, he is entirely correct. It is true that he is not *deaf*. For the term is properly used to describe one who was born without power to hear, or who suffered a complete or very serious loss while still so young that the ability to speak was not well established. These people suffer from a far more serious disability. They must hurdle far more psychological and physiological obstacles than confront the hard-of-hearing. Fortunately their number is relatively small —about 60,000 in the United States.

If we want to be really technical, the correct scientific term for deafness is *hypacousis*. Although in general I incline to the phrase "hard-of-hearing," I myself occasionally use the epithet "deaf." But in no instance do I mean those unable to hear anything.

The difference between the two groups is similar to the difference between being blind and having sub-par vision. The blind person cannot make use of light in adjusting himself to the world; his inner life, his mental images, the range of his ideas, and the scope of his activities are quite different from those of his more fortunate brother.

The truly deaf individual cannot make effective use of sound in adjusting himself to the world. In addition, he does not learn to talk unless special measures are taken. The ability to speak is not, as some people think, an instinctive capacity which develops automatically at a certain age. It is learned by the developing child through imitation of sounds heard. The mother holds up a doll and says to her baby, "Doll—doll." In time he associates the visual image of the doll with the composite sound made up of the sounds of "d," a short "o" and "l"—and has begun to learn to utter words. (If it is a French or a Chinese child, of course he begins to connect this particular visual image with an entirely different set of sounds.) But if the child cannot hear, he is unable to establish any auditory relationship with the visual image, and so cannot learn to express thoughts by the ordinary process.

A complete pathway of learning is blocked for the truly deaf person. Since, for example, learning to read is normally predicated on ability to speak, the process consisting of identifying certain printed or written symbols with certain speech sounds, the deaf child likewise does not learn to read. Unless special measures are used, he is on a dead-end street. The deaf person knows only what he has himself experienced and seen. The whole accumulated store of human wisdom, passed on to each generation so that it does not have to start from scratch, is not for him. His store of thoughts and his mental processes are thereby limited.

Note that I have said "unless special measures are employed." The deaf child *can* learn to speak (although enunciation and tone quality will probably always be deficient) and *can* learn to read. He can acquire knowledge and develop mental ability of high quality. But this calls for particular and painstaking educational methods which must be assiduously pursued for a long time.

In attempting to reconcile the conflicting facts—that he is not entirely deaf and yet misses part of what is said to him—the hard-of-hearing person is likely to blame his condition on external circumstances. He will have every conceivable type of alibi. He will complain that people speak too low or slur their words. He will say that the room where he had trouble hearing was noisy, or that the acoustics was bad. He will say a fire engine was passing, or that the next-door neighbors were fighting—but he will never make the simple admission: "I can't quite hear you!"

Another reason for reluctance to admit this particular weakness is historical. Only in comparatively modern times has it been realized that the reason deaf persons did not learn to speak was that they did not hear; that their dumbness was due neither to anything wrong with their vocal apparatus nor to lack of mental capacity. But during the past two or three centuries it came to be realized that the intelligence, the capacity to learn, of the deaf person was the same as that of the normally hearing. The real problem was to devise means for filling this great need.

It is only within the last hundred years that definite progress has been made. In medieval and ancient times the deaf person was regarded as mentally defective. Untouched by ordinary education, unable to speak, read or write, and so unable either to receive the thoughts of others or to communicate any ideas of his own except the most rudimentary desires, he was classed with the insane. Under a number of systems of law, he was forbidden to hold property, to inherit, to be a party to contracts.

Some of this ancient misconception, this association of inadequate hearing with mental incompetency, has persisted into our own time. It is evidenced in the

slang use of the word "dumb" to mean "stupid." Certainly no one likes to be considered mentally deficient. Who can conceive of a more terrible blow to the ego? So although the historical stigma has been completely disproved today, it explains in part the tremendous inhibition which many of us still feel against realistically facing our problems.

Then again, we never like to confess to imperfection or physical weakness. Who wants to go around telling his friends, or even himself, that he is less strong or skilled, or that she is less beautiful or graceful, than others? Faulty hearing is not so obvious as a puny physique or buck teeth, which makes it easier to gloss over. But any defect is sufficiently evident to other people without advertising it.

Yes, indeed, a hard-of-hearing person constantly tries to fool himself. He may succeed for some time in insulating his better judgment from the truth, even though this results in the most absurd contradictions within his own mind. I once had a letter from a man who wrote that tests had shown he had "better than average hearing." But in the very next sentence he conceded he had considerable trouble understanding what people said to him in his business! He apparently saw no inconsistency in these two statements. As a matter of fact, the remark, "I hear all right—I just have trouble understanding," is very familiar to physicians and others who meet with many of our group. It is the standard explanation of those who know they are not deaf, but shy away from acknowledging poor hearing.

Granted that he has been obliged to admit the condition to himself, a person may still attempt to conceal his blurred perception from others. Some are able to do this over prolonged periods. They adopt various strategies. They may have acquired, more or less unconsciously, an ability to read lips, or have developed skill in rapidly "piecing out" the meaning of a spoken sentence from one or two key words which they catch. Moreover, they may have cultivated a knack of giving answers which are general enough to seem to be responsive to a preceding remark.

They may guide the conversation to keep it on familiar ground, or let the other person do most of the talking. Perhaps they may assume a brusqueness of manner so that when they fail to reply it is put down to eccentricity rather than to bad hearing. My particular defense mechanism lies in talking too much. Whenever I cannot hear, and feel self-conscious, I at once begin a monologue and hold the floor. At least I can follow my own conversation! Fortunately, too, my wife is a good listener. And by such little wiles we may conceal bad hearing, even from our intimates, for an indefinite period.

It is more likely, though, that when one of us believes he is hiding his difficulty, he actually is not. Probably his actions have long since made it clear that he does not hear well but, because of his plain desire to ignore the fact, his friends are careful of his feelings and refrain from mentioning it.

In my undergraduate days at Harvard, I realized for the first time that I had "tin ears." But instead of facing and overcoming the problem, I began to alibi. I carefully avoided Professor George Lyman Kittredge's famous course in Shakespeare, because of my inability to follow the lectures. "Kitty" had a method of delivery that would make any hard-of-hearing student grow prematurely gray. Striding up and down the lecture platform at a mad hatter's pace, he would violently stamp his cane for emphasis and declaim favorite passages into the depths of his generous beard. Naturally, I thought up a "good" reason for not taking his course—I was simply not interested in Shakespeare. Similarly I lost myself the privilege of studying under Professor Hugo Muensterberg, the noted psychologist, who had a heavy German accent. So I wrote my family I saw no sense in signing up for psychology, which was probably a passing fad!

Respect for the sensitiveness of a hard-of-hearing person is often a mistaken kindness. In many instances, the friends and family will regularly make fish mouths, raise their voices to a screech, and enunciate with exaggerated emphasis when addressing him. I have one friend, who, when he is trying to be confidential, looks like a carp and sounds like a bottle of seltzer! In this way, the acoustically handicapped individual is confirmed in his delusion that his hearing is not so bad. Of course, he realizes that he has trouble understanding strangers and casual acquaintances, but most of his contacts are with people who know about his impairment and make allowance for it. For those other occasions when he fails to grasp the meaning, he can always find some plausible excuse.

The person who fools himself by putting his fears into a logic-tight compartment of his mind where reasoned thinking cannot penetrate, or who privately admits his inability but prides himself on his skill in concealing it from others, is not really "getting away with something." On the contrary, the chances are that he is storing up troubles and creating obstacles which will eventually be harder to overcome. The friends and relatives who aid the deception are similarly compounding the perplexities, for the effect of such action is simply a postponement of the solution.

In some instances, a mild degree of self-hypnosis does no harm. In fact, if someone wants to paint a self-portrait of a genius, and can thus flatter his own ego without unduly irritating his friends, the fantasy may actually be beneficial. But nothing is so insidious as the inner deception of the hard-of-hearing—which leads directly to unwholesome seclusion. When following conversation becomes too much of a strain, it is so easy to say, "Oh, I don't care to go to parties—just a lot of drinking and small talk—I'd much rather spend the evening home with my stamp album"; or, "What's the sense of crowding myself into a theatre or movie? The stuff being shown around town these days isn't really worth the time or money one spends on it. I'm much better off staying at home with a good book." Continue this type of thinking for a while and you will find yourself twiddling your thumbs and staring at the four walls, secretly hurt because your

family and friends are so "neglectful." The most dangerous "occupational disease" of the hard-of-hearing—the one to be most stringently guarded against—is the tendency to become a hermit!

Often, someone who has passed the point of trying to kid himself or those close to him will still balk at taking steps to keep his situation from becoming a serious detriment. He will strongly resent any suggestion that he do something about it. He acts as though he had a sense of shame and guilt. However irrational such feelings may be, they are nevertheless widespread. It is apparently all right for the facts to be known among a circle of friends. But for any outsider to refer to them produces a feeling of embarrassment and indignation such as one would normally experience if the most intimate acts of his life were maliciously spied out and reported in detail in the daily newspaper!

This attitude came to the light of day when the sale of electrical hearing aids first began to be vigorously promoted. The manufacturers reasoned that since imperfect hearing was so widespread, and since it was so burdensome to many of us, that all that they had to do was to produce something which would be helpful, and then modestly whisper that the devices could be purchased at this or that address. They were sure there would be a stampede to buy.

But the best laid plans, as usual, went "agley." A few people came out of curiosity, looked at the instruments, and said it was nice to know there were such things for them to buy "when they were deaf enough." And these casual comments were often offered by people who could hear conversations only when shouted at a distance of a foot from their ear! Those, however, who came to examine what was offered, were only a handful compared with the vast numbers who really needed them. The great majority of those who were worse off did not so much as attempt to determine whether they could now obtain relief.

Even today, a salesman, calling at a residence, wears out his knuckles rapping on the door to rouse the occupant. And then, when the door finally opens and the salesman explains his mission, the deafened householder soundly berates him for suggesting that anyone there has trouble hearing!

A prominent otologist once informed me that if he were to tell patients, on the occasion of a first visit, the blunt truth about their deficiency and what could be done to alleviate it, he would lose most of them at once and would never afterwards have an opportunity of helping them.

"Fortunately," he said, "there is nearly always some condition of the ears or nose or throat that can be treated. It may be only a slight inflammation causing a post-nasal drip, or impacted wax to be cleaned out. But at least it enables me to perform some service in good conscience and to ask them to make another visit. Only after three or four such visits, when the patient has begun to feel friendly toward me and gained a desire to co-operate, can I deal frankly with him. If I were to make the attempt right at the start, he would go from one doctor to another, until he found one who would tell him what he wanted to be told, namely, that his hearing wasn't so bad and that there was some magical cure for it."

3 Blueprint of the Ears

UNLESS you learn a little about the fundamental structure and mechanics of the organ of hearing, you will never know what you can legitimately expect of your doctor, and what constitutes an unreasonable demand. Hence this layman's chapter on the physiology of the ear, which attempts to explain a delicate and exceedingly intricate mechanism in the simplest terms.

Anatomists describe the hearing apparatus in three parts: the external, the middle, and the inner ear. What we ordinarily refer to as "the ear" is really the external ear, an oval shell-like appendage of skin and cartilage attached to the side of the head. The various furrows and depressions of this flap serve to gather and to funnel sound into the external auditory canal and to prevent water or perspiration, running down the side of the head, from entering it.

The canal itself, which is about an inch and a quarter long, differs in dimension and shape in various individuals. Hairs, growing around the exterior part of the tube, serve to keep insects and other foreign bodies out. Wax, secreted by glands in its lining of skin also has the protective function of trapping extraneous substances.

The inner end of the auditory canal is closed by the ear drum, or tympanum, a tough membrane set across it at an angle. Slightly concave in shape, this tissue looks like a flattened cone with the point directed in.

Behind the drum, enclosed in the bone structure of the skull is an irregularly shaped cavity—the middle ear. It is so small that it could scarcely hold more than five or six drops of water. Yet it may be compared to an irregularly shaped room having four walls, a roof, and a floor. The external or outside wall is formed by the drum membrane which separates the middle and the external ear. The front wall is directly behind the point of the jaw. In its upper part there is an aperture which forms the inner opening of the Eustachian tube. The back wall has a vent leading to the mastoid bone.

The roof consists of a thin plate of bone, which separates the middle ear from the brain cavity. The floor, likewise a thin plate of bone, lies directly over the bulbous portion of the jugular vein. The inner wall (which some doctors consider the most interesting architectural feature) is really the outer boundary of the inner ear . . . that is, it constitutes a "party wall"

between the two chambers. It contains two so-called "windows," the oval window and the round window.

The middle ear is air-filled and, as I have just pointed out, connected with the throat by the Eustachian tube, a passage about an inch and one-half long, with the inside diameter approximating that of a pencil lead. The throat end of this passage is almost at the level of the floor of the nose. The upper end opens into the front wall of the middle ear—hence its connection between the middle ear and the back of the nose. Ordinarily the Eustachian tube is collapsed, but it opens when you yawn or swallow. Its purpose is to provide ventilation and drainage for the middle ear and to equalize air pressure on both sides of the drum.

We are not conscious of its movements except when we experience a relatively sudden change of air pressure. When an express elevator shoots up to the top of a skyscraper, or an airplane elevates you towards heaven, you are apt to feel a sense of pressure in your ears. This is because the air contained in the middle ear (on the inside of the ear drum) is at ground level pressure, while the air in the canal (on the outside of the drum) registers a lower pressure. The difference causes a slight change in the position of the drum. If you yawn or swallow, the Eustachian tube opens, and the air pressure on both sides of the drum is equalized again. When you descend from a height rapidly you have the same sensation as when riding in a subway under a river. The process is reversed—the air in the canal is at a higher pressure than that in the middle ear and the drum is pushed imperceptibly inward. Here also, yawning or swallowing will restore the balance.

Stretched across the space of the middle ear is a chain of three curiously shaped bones, the smallest in the entire body. The first, known as the *hammer,* is club-shaped. Its "handle" end is attached to the ear drum. The other end fits into a depression of the second bone, called the *anvil.* The anvil in turn is attached to the third bone, the *stirrup,* which actually has the contour of the loop-shaped foot rest that hangs from a saddle. The footplate of the stirrup fits into the oval window, held against it by a ligament resembling an egg-shaped washer.

The three bones, referred to collectively as the *ossicles,* are fastened together and held in place by fine ligaments so as to form a linked structure. Their function is that of a series of levers. They decrease the *extent* of the movement but increase its intensity. Also, they serve as a protection against damage to the ear from very loud sounds. The tensor-tympani, a single tendon stretched across the middle ear space, fastened to the back of the ear drum, is usually relaxed, but when an abnormally loud noise occurs, it suddenly pulls the drum very taut, and prevents any vibrations from going through the ossicles to the oval window of the delicate cochlea thus, mechanically speaking, it declutches the bones from the cochlea by "braking" the sound.

Situated on the inner side of the middle ear, more deeply in the head, is the real or vital organ of hearing —the inner ear. The most important part of the auditory apparatus, it gains protection by being embedded in the hardest bone of the body.

The inner ear consists of two sections . . . the cochlea and the system of semicircular canals. The latter are the seat of the sense of balance.

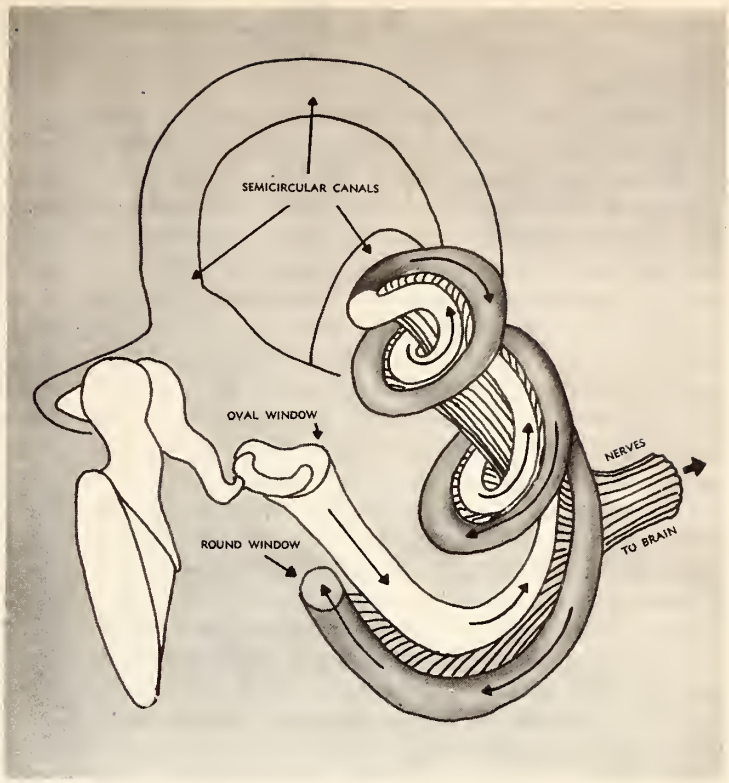
The cochlea, a tiny, tapering tube about the size of a pea, coils up like a snail. A partition of bone and flexible tissue divides it on the inside throughout almost its entire length—and really forms two canals, the ends of which connect with the oval and the round windows. Microscopic hair-endings of the hearing nerve—approximately 24,000 of them—lie in this flexible tissue. Since each one of the nerve-endings seems to respond to a different tone, and since the membrane in which they lie is tapering in form, this part of the ear is sometimes compared with a harp or with the strings of a piano.*

Unlike the air-filled middle ear, the inner ear is filled with fluid. When a sound occurs (as for example when you agitate the clapper of a bell) the clapper sets up vibrations in the air—rapid and very minute air compressions and rarefactions that travel outward from the sound-source. These sound waves, striking the ear drums, cause it to oscillate. The drum moves the hammer, the hammer moves the anvil and the anvil moves the stirrup, transmitting its vibrations to the oval window.

As they push on the oval window, the movement animates the fluid of the cochlea, and increases its pressure. The impulses proceed along the cochlea through one of the two sections into which it is partitioned, and return by way of the other section. They expend their force against the flexible membrane which seals the second of the two windows connecting with the inner ear—the round window. In other words, there must be sufficient "give" to take up the increased pressure. And this is the function of the round window.

The motion of the fluid in the cochlea agitates the nerve-endings in the membrane dividing the inner-ear cavern. The stimulation of these nerves is then transmitted to the brain. Finally, if there is nothing wrong with the hearing center of the brain, we hear!

* The structure of the cochlea is much more elaborate than indicated by this description. The various parts are extremely intricate, the function of all of them is not understood. It is unnecessary, however, to go into further detail for our purpose.



The cochlea is a partitioned tube coiled like a snail

Cochlea is schematically pulled out to show sound path and the two windows

4 Breakdowns and Bottlenecks

Our bodies are wonderful battle grounds. When disease-causing microorganisms begin multiplying rapidly in the nose or throat, the body reacts defensively in several ways. The blood vessels in the affected area dilate to bring a greater blood supply to the fight against the invading germs. As a result, the tissues become inflamed and swollen. They may even puff out to several times normal thickness, producing, for example, the "stopped-up" feeling in the head during a cold. The mucous membrane secretes more copiously than normally to wash away the germs and the waste products of their life processes, resulting in such symptoms as a running nose and watery eyes.

The blood generates chemical substances unfavorable to the growth of germs, and some of its white corpuscles ooze through capillary walls to attack them. There are thousands of white corpuscles in every drop of blood, and each one is an independent microscopic cell moving about under its own power. Its body may be compared with a toy balloon partly filled with liquid. Having the ability to assume almost any shape, the corpuscle eats by extending its body to envelop its prey and then digesting it. The purpose of the white corpuscles is to destroy germs within the body; but when one of them ingests more germs than it can take care of, it dies. Ordinarily, the bodies of dead corpuscles are carried off by the blood and are part of the excreted waste-matter. However, if a great many of them die, concentrated at one spot in fighting an infection, their bodies accumulate as pus.

Throat infections may involve the ear by way of the Eustachian tube. The mucous membrane lining the tube then becomes so inflamed and swollen that there is no longer a free passage into the throat, serving to drain and ventilate the middle ear. Meanwhile, as part of the defense against the invading germs, the mucous membrane is secreting at an accelerated rate. The small cavity of the middle ear fills with liquid which, although clear at first, soon becomes purulent.

Cells of connective tissue in the mucous membrane become abnormally active during periods of infection and may even send out fine filaments into the liquid filling the middle ear. After the infection has subsided and the pus in the middle ear has been absorbed and eliminated, the minute strands of connective fibres remain, stretching like a tiny cobweb through the middle ear cavity, trussing up the ossicles and impeding the movement of its small bones.

When the Eustachian tube swells closed and the middle ear fills with fluid, the ear is bulged outward, producing a feeling of stuffiness. Pressure of the trapped fluid may reach a point where it causes the ear to ache. If the pressure continues to mount, the ear drum bursts and the fluid drains out through the ear canal. Before this occurs, however, the doctor may make a small incision. This procedure is far preferable, for he will lance the drum where it is least likely to damage the chain of ossicles behind it, whereas a spontaneous rupture may occur anywhere on its surface. Also, a clean, straight cut heals more kindly than such a jagged perforation.

Once an ear drum breaks or is opened, the pressure is relieved, the inflammation in the middle ear generally clears up, the drum heals, and, with good fortune, hearing is not affected. In some instances, however, the condition persists. The lining of the middle ear continues to secrete abnormally and the drum is kept open by the continued drainage, thus producing a chronic "running ear."

Children, with acute inflammation, complain of earache and usually run temperatures. In infants too young to describe their pain, such infection may be manifested by temperature, crying, and restlessness. Certainly any infant or child who develops an unexplained temperature should have his ears examined.

Quite often the same picture may present itself when a child has a mastoid infection. An operation, properly performed when it is needed, has long been the surest way of preserving a child's hearing and of preventing chronic running ears. It is true that many may recover without surgery, but in the interval the ear drum is damaged, hearing is impaired, and the child may be left with a chronic running ear. Incidentally, the new sulfa drugs and penicillin have been of enormous aid in combatting mastoid infections.

Ear inflammation can also be caused by infections of the nasal sinuses, whether acute or chronic. For like them, the enclosed character of the middle ear cavity makes it a favorable breeding ground for germs. The sinuses are hollows in the bony structure of the head—six located above and behind the eyes, two below the eyes in the cheek bones. Designed to give resonance to the voice, they are connected with the cavernous system of the throat, nose, and middle ear, and are lined with a continuous tissue of mucous membrane. Nose or throat infections, therefore, may easily invade them. Because these cavities are warm, dark and moist, because their drainage passages are small, and their location makes them difficult of access, infections that gain a foothold in them require the attention of a skilled physician or a specialist.

A running ear should never be taken lightly. A punctured drum, constantly kept open, presents the danger of additional and perhaps more virulent infection of the ear through the external canal. Certainly a person with running ears should not dive or submerge the head in water. Eventually the continuing infective process is almost sure to lessen the hearing; the drum and lining of the middle ear become scarred and thickened; the fragile bones of the ossicular chain may be partially eaten away, and a permanent hole remains in the drum membrane.

Essentially the action of the middle ear is mechanical; its function is to *conduct* sound vibrations. The action of the inner ear is to transform mechanical energy to the electrical energy of nerve impulses; its function is to *perceive* sound. On the basis of this distinction, difficulties may be classified as conductive (where the damage to the hearing apparatus is in the external or middle ear) or perceptive (where the damage occurs in the inner ear or in the nerve connecting it with the brain). In many instances, conductive and perceptive impairment are combined.

Perceptive hearing impairment, that is, damage to the nerves of hearing, can result from a number of causes. Chief among these are prolonged exposure to loud sound and the disastrous consequences of certain acute diseases. The toxins of meningitis, scarlet fever, mumps, syphilis, and the like, carried to the inner ear by the blood or entering the fluid that fills it, may destroy some of its delicate nerve-endings. So may hemorrhages of the inner ear or brain.

In children, there are many other causes of aural trouble. However, it cannot be emphasized too much that contagious diseases, particularly scarlet fever and measles, are an important source of inflammation of the ears and expert medical care is essential, no matter how light the attack. Scarlet fever especially causes severe damage to the drum. In fact, many cases of impaired hearing and chronic discharging ears are a direct result of it. If a child develops any one of these maladies, the ears should always be examined as a matter of routine. Trouble should be anticipated and properly cared for. One other contagious disease—epidemic meningitis—does not damage the ear drum, but may affect the hearing nerve, and result in permanent deafness.

Also among the arch enemies of healthy ears, especially in youngsters, are the many infections that center in the nose and throat. These include several of the "children's diseases"—measles, diphtheria, scarlet fever again and—most important of all—the common cold. An illness may be comparatively mild, with only slight aural symptoms, or it may be most severe, causing abscess, running ears, and mastoiditis.

Other common causes of infections of the nose and throat are diseased adenoids, tonsils, and sinuses. Any child who has repeated sore throats and a clogged or running nose, should be examined for these conditions. Often it is necessary to remove the tonsils and adenoids and have skilled treatment for the sinus condition, but these are decisions which must be made by your doctor.

Then there are many children who are subject to frequent colds, and who will develop ear trouble with each repetition. Indeed, the common or domestic variety is responsible for more ear complications and hearing loss than any other illness. Its precise origin is not known. The medical world suspects that it may be due to a virus. Yet not knowing the exact cause, it is a difficult thing to prevent.

Long-continued or violent stimulation fatigues the hearing nerves so that they fail to respond. Loud noise deafens a normally hearing person temporarily, but with rest the nerves recover their ability to react and hearing is restored. After prolonged exposure, however, they may not regain this power. Animals have been subjected experimentally to the sound of a single note over a long period. When they are killed and examined under the microscope, it has been found that the nerve-ending in the "harp" of the cochlea corresponding to the particular note has died.

Various drugs and industrial chemicals may poison the hearing nerves. The effect of quinine, evidenced by ringing in the ears, is common knowledge. Also aspirin, alcohol and nicotine often have an injurious effect, as do certain poisonous substances used in industry such as lead, phosphorus, and mercury.

In some cases, medical or surgical treatment may improve hearing. If acuity is reduced by impacted wax in the ear canal or by the unsuspected presence of some foreign body, its removal *by a doctor,* preferably an otologist, will, of course, correct the situation.*

The removal of tonsils and adenoids sometimes results in improvement of hearing. Excessive growth of lymphoid tissue—which is tissue such as that composing the tonsils—around the throat end of the Eustachian tube may close the opening from the throat into the middle ear. When this happens, the air in the middle ear is absorbed, creating a partial vacuum in the middle ear cavity. As a result, the drum is pushed inward and the chain of tiny bones connecting it with the inner ear is forced into an abnormal position, with consequent restriction of its mobility. In such circumstances, a person may hear better at high altitudes because the lower air-pressure permits the retracted drum to return to a normal position. Removal of the lymphoid tissue, which allows the Eustachian tube to function properly, can thus produce better hearing.

Particularly in childhood, the lymphoid tissue is most active during periods of nose and throat infection. Even after the removal of tonsils and adenoids, some of it may remain and later increase in size. Since the lymphoid tissue is more susceptible to the destruc-

* Never attempt to remove a foreign body from your own or someone else's ear, nor allow another layman to try it. In most persons, the ear canal narrows at a point about halfway back to the drum and then becomes larger again. Efforts to dig out all extraneous substance force it beyond this "waist" in the canal, and its extraction, especially if it is a hard object, becomes a difficult and delicate task. Doctors also advise strongly against cleaning the ears with hard or pointed objects—tooth-picks, matches, hairpins, and the like. You run the chance of puncturing the ear drum or of scratching the lining of the canal, thus making it liable to infection. Moreover, if there is a great deal of wax in the ears, your amateur attempts to cleanse them may pack it against the drum, whence it can be removed safely only by having a doctor wash it out.

When a child develops an earache, too many people resort to home treatment. It is not wise to put hot oil or other remedies in the ear before a physician makes an examination. Any medicines so used may distort the appearance of the ear drum and render subsequent diagnosis difficult. To emphasize their warning against "sticking things" in the ears, doctors sometimes say that nothing smaller than one's elbow should ever be inserted!

tive power of X-rays and radium than the area surrounding it, these instruments may be used to inhibit its excessive growth. In certain cases, small pellets of radium have been inserted for a series of brief treatments in the throat end of the Eustachian tube.

Hearing may be lowered by a chronic "catarrh"—that is, a non-acute but a persisting infection of nose and throat which produces a swelling of the Eustachian tube and consequently intereferes with hearing. A physician may be able to clear the condition up with treatment, perhaps involving drugs, diathermy or a general raising of the resistance, and thus bring about some increase of hearing power.*

Or the doctor may find that some focus of infection, such as a bad tooth, is producing toxins in the system that are affecting the auditory nerves. Here again it may be possible to effect an improvement.

Some of us are markedly sensitive to certain substances in food, in the air we breathe, or in the cosmetics and toiletries we use. We have an *allergy* to them. Allergies typically manifest themselves as an irritation of mucous membrane. They likewise may be a source of lowered acuity. Under a physician's guidance the causative agent should be discovered and avoided by the individual in question.

Investigations have been made of the possibility of restoring hearing by the use of endocrine products, the substances secreted by the ductless glands. Some of the experiments in this direction have at first appeared promising, but further study has invariably diminished the initial optimism. At present there is no indication of any widely applicable treatment for deafness by this means.

Change of locale will occasionally benefit the hearing, especially with persons who have sinusitis or who are highly susceptible to colds, provided that the move is from an extremely fluctuating climate to a more equable one.

Analysis of a partially deafened person's living habits may reveal factors which, if changed, will result in an improvement of general health and a consequent betterment of hearing. Diet can be extremely important. Bad eating habits, for example, can lower resistance to all infections, especially to colds and sore throats, with possible adverse effects upon the ears. For, as is generally known, much of the food we eat loses vital elements during its cooking or in the processing, as in the milling of white flour.

Vitamin C, found most abundantly in lemons, oranges and raw and canned tomatoes, is closely connected with resistance to illness. Many studies have indicated that when the body contains this vitamin in large amounts, the number of bacteria in the nose and throat is reduced and those present are less likely to become virulent.

* "Catarrh" is an inexact term meaning literally a "flowing." It refers to an inflammation, (generally sub-acute), of the mucous membrane, which causes an abnormal discharge. Although usually applied to nose or throat conditions, the term can be used with respect to the middle ear, stomach or any other mucous membrane-lined organ.

Vitamin B is related to the health of the nervous system and serves as a "pepper-upper" for all the senses. Consequently, it is quite conceivable that it influences the auditory system. Cases have been reported in which hearing has been improved through Vitamin B administration.

A particular ear condition known as Menière's syndrome, in which hearing loss is associated with intermittent attacks of severe vertigo and a ringing noise in the ears can sometimes be ameliorated by diet aimed at reducing the fluid content of the body.

The deafened person must realize, of course, that diet is by no means a cure-all for aural impairment. Indeed, the entire profession is in marked disagreement about the relation of diet to hearing. But self-diagnosis and the adoption of food fads will practically always prove useless and may prove harmful! The effect of a special regimen upon hearing is still largely in the experimental stage and has not been definitely established. Only a physician is qualified to determine whether vitamin therapy might be beneficially employed in your case.

Another—and more drastic method of relief—is surgery. A procedure known as the window or fenestration operation sometimes produces spectacular results even in persons severely deafened. The American pioneer and leading sponsor of this treatment is Dr. Julius Lempert, a New York ear surgeon. It has received considerable publicity in recent years but has many grave drawbacks. The medical profession is still divided in its opinion as to the value and permanence of this technique.

The operation is employed to relieve deafness resulting from a condition known as otosclerosis. In otosclerosis, a tiny deposit of calcium gathers at the edge of the oval window and grows until it forms a solid bridge to the edge of the footplate of the stirrup. The stirrup is thus, in effect, "bolted." It can no longer move freely to transmit sound vibrations to the fluid of the inner ear, and the person loses his hearing.

The bony fastening is so small and in such a position that it cannot be broken without injury to the ear structure. The window operation, therefore, is intended to make a new window into the inner ear.

Either from a point in the ear canal or from behind the outer ear (the regular approach employed in a mastoid operation), the surgeon opens the skin and cuts away the bone to expose one of the semi-circular canals of the inner ear. Then, with a tiny dental burr, he scoops out a small trench-like opening into the semi-circular canal and seals the aperture with a flap of skin, to prevent the fluid of the inner ear from escaping. Since the covering of the new window into the inner ear is flexible, the mobility of the inner ear fluid is restored.

Because the operation is effective only for a certain type of hearing loss, accurate diagnosis of the cause of the impairment is essential. If the canal is not what was supposed, the operation is futile. In addition, hearing deficiency due to otosclerosis is not infrequently accompanied by loss due to nerve impairment,

and the procedure does nothing to diminish the latter. The operation is so delicate (much of it is carried on with the surgeon looking through powerful magnifying glasses) that only relatively few specialists have the requisite skill. Some doctors divide it into two stages. In the first they prepare the site and dress the incision. In the second, several days later, they complete the operation. But if it is not a success, the patient's hearing afterwards may become worse than it was before.

In a considerable number of cases, new bone grows over the opening made in the inner ear, thus closing the window that has been artificially created. Accordingly, here the improvement is only of short duration. Modifications of the operative technique, which greatly reduce the number of failures from this cause have lately been reported. In addition, there have been, in recent years, other improvements in the operation. However, it remains applicable only to one kind of deafness and subject to the disadvantages outlined above. It is interesting to note that the particular type of deafness benefited by the operation is apt to receive the maximum gain by the use of a hearing aid. Perhaps some day there will be a comprehensive and permanent cure for deafness, but unfortunately the time has not yet arrived.

5 Out of the World

Lowered hearing often causes injurious psychological effects. In fact, the greatest disadvantage of dulled ears is not the daily inconvenience of faulty aural reception, not the drain of physical strength brought about by straining to catch missing syllables, but rather an entire sequence of changes in attitude, outlook and spirit.

Very frequently the damage to personality seems out of all proportion to the seriousness of the physical condition. This situation baffles even the victim himself. He does not fully appreciate the connection between changes in his power to hear and changes in his emotional, intellectual, social and economic life. And if this cause-and-effect relationship often escapes him, even more so is it likely to puzzle the normally hearing persons with whom he comes in contact.

Anyone, who has not himself gone through the sad experience or made a study of the subject, is completely baffled by many of the traits he observes in a hard-of-hearing person. It does not seem possible that so apparently trivial a cause as partial dulling of one of the senses can have such grave, far-reaching, and varied effects.

The affliction is purely subjective. The sufferer appears perfectly normal and healthy. He bears no outward scars or mutilations. Yet his behavior is frequently erratic and unpredictable. He is cut off from the world of sound, deprived of his means of communication with those about him. He is bewildered and frightened by his sudden sense of isolation, like a lost child who sees a threat in every strange face. Because of an inability to appreciate such feelings and their consequences, even the persons closest to him are likely to be unsympathetic or even impatient. Little do the normal hearers realize that under similar circumstances they would act the same way.

How, then, can the hard-of-hearing surmount our psychological hurdles, the most serious of all the problems we must face? The first step in the right direction is to stop ourselves from mulling over them in secret, from worrying, growing daily more heartsick and depressed. Indeed, the best way to avoid or correct psychological ills is to bring them into the cold light of conscious inspection. If then, we examine the roots and trace the development of some of these ills, we can better understand the mechanism by which they operate.

You may be tempted to glide over this phase of the discussion. You may persuade yourself that "psychology" is intangible and vague, and that you are seeking more concrete information. Yet what is said here pertains to the very core of the problems of hearing loss; it underlies everything else.

You may ask yourself how to stop worrying. It offers a challenge to you as a strong-minded person to switch your thoughts by a conscious effort of will. The late Dr. W. Beran Wolfe, a very practical psychologist, used to recommend what is called "the plus gesture"—a simple and pleasant prescription. When you feel yourself growing blue, do something. Break your thoughts. Don't sit and mope. Take a walk. Call on a friend. Go to the movies—or to church. Buy yourself a gay hat, a new tie, or an ice cream soda. Visit the art museum, and look at the beautiful paintings. Make a trip to the zoo, and inspect the babies and the dogs in the park. In a word—give yourself a lift!

To many of us, the greatest of all lifts comes from going to church—for the House of God—with its manifold activities, should be the energizing center of every community. Get in tune with the Infinite, whether by prayer, meditation, a confession of faith, or whatever satisfies your own spiritual needs. Yet it seems peculiarly unfortunate that so many who have derived solace and inspiration from religious services stop going to church as soon as they can no longer hear the sermons. Not content with shutting themselves off from man, they shut themselves off from God!

Cynics may question the practical good in this program. They may inquire whether I believe in miracles —and expect to restore perfect hearing by faith and prayer. My answer is—every man to his own belief. Regardless of creed or theology, however, we will all

be helped in varying degrees by communion with a higher power. The experience may not specifically benefit the hearing. But anything that adds to our serenity of soul, our equanimity of mind, our mental and physical poise, will either directly or indirectly benefit the hearing.

You must not be discouraged by the description of the after-effects of deficient hearing. They do not occur in every instance, although they are more likely to occur than not. *But they are not inevitable.* Whether or not they develop depends almost entirely on you as an individual.

It would be hard to conceive of any other ordinary bodily injury which could produce such a variety of psychological and emotional disturbances, as can be brought about by lessened hearing. Depression, moodiness, lack of self-confidence, handicapping mannerisms—are only a few of the consequences. To comprehend why this is so we must realize the exact nature of the hearing sense.

All existence is a matter of adaptation to environment. Living creatures have a number of sense mechanisms through which they obtain their information about the environment. On the basis of this knowledge each human being reacts in such a way as to preserve himself and satisfy his needs. The good life requires a balance as delicately adjusted as that of the tightrope walker. Successfully poised, you have a sense of well-being, contentment, happiness. Otherwise, you are restless, discontented, unhappy.

An example, a very simple one, of reacting in response to sense impulse occurs when we pick up an object that is hot enough to burn. The sense of pain is stimulated—and instantly we drop the object. We have adapted ourselves to a fact of our environment. If the sensory nerves for temperature and pain did not provide us with knowledge about the heat of the object so that we could adapt ourselves by moving out of contact with it, we should sustain injuries which would damage the body and in time even destroy it.

Sight and hearing are generally regarded as the two principal faculties with which we are endowed. It has been said that we receive about two-thirds of our impressions through sight, the balance being distributed among the other senses. It seems to me, however, that such statistics are highly misleading since they refer only, or chiefly, to reactions concerning our material surroundings. Actually, the physical environment, the background of inanimate objects, is not the only world in which we humans exist. For mental and spiritual development demands a social environment, composed of people, their desires and ideas.

The different senses reinforce and overlap one another so closely, that their exact functions cannot be separated. Yet I believe a valid distinction can be made between those of sight and hearing. I would say that sight is the sense we use more than any other to give us information about our physical environment, while hearing is the one on which we depend heavily for information about the social environment.

We use our eyes, for example, to avoid running into obstacles as we walk along the street, to locate a store where we want to buy something, to find the knife and fork at our place at table. We use sight, too, in our contacts with other people. We "size up" a stranger whom we meet, partly by his appearance, that is, by the picture we receive through our eyes.

But for contact between our mind and his, we rely on our ears. It is what the other person *says* that is finally important.

Ideas, the product of minds, are most often expressed in language. Some of this language is written; and books, magazines, and newspapers are a highly important element of the stream of information constantly pouring in to us. But a larger number of thoughts are given form in speech, and so require hearing for their communication to others. Many books, in fact, represent the crystallization in writing of concepts that have previously been hammered out in discussion. Similarly, the vast number of written instruments used in business generally serve to record meetings of minds that have first been established in oral conference.

The great bulk of our mental furniture then, ideas and beliefs, come to us through our ears—in conversations and discussions, in the oral lessons of teachers, in lectures, over the radio, from the stage and the talking screen. Our social life, the relaxation and recreation of companionship with other humans, is based almost entirely on word of mouth. Here we appreciate the factor of speed in spoken language as compared with that of handwriting. A social gathering depending on pads and pencils—or even the interpolations of a friend—for communication is almost unthinkable. The give-and-take of information, opinion and wit would be almost impossible.

A person who does not see clearly is cut off from his most important source of knowledge about the material world in which he lives. But a person who does not hear clearly is cut off from a large segment of the idea-world; he is separated to greater or less degree from the *minds* of others.

In civilized living, the social and intellectual environment is of greater importance than the physical. Modern man's adaptation to his natural surroundings is more and more accomplished by machinery and the technique of organization. A modern man does not have to hunt through the forest for food or to fell trees to build shelter. Keeping ourselves clothed and fed, protecting ourselves from the cold, crossing rivers and climbing mountains, are not nearly so difficult for us as they were for our ancestors. By far the larger part of our adaptive effort is directed toward associations with others like ourselves. Human beings, rather than inanimate objects, are the paramount factors in our existence. So we must constantly have information, gain understanding from and about men and women and we must always be behaving in such a way as to establish and maintain proper relations with them.

It is because civilized living calls primarily for *adaptation to a social environment,* and because hearing is the chief avenue for establishing this contact,

that impairment of the hearing sense so frequently has consequences apparently out of all proportion to its seriousness, and also utterly remote from the cause.

To prevent the development of bad habit patterns, you should know what undesirable traits and attitudes you are likely to acquire. Thus you will be able to detect them in their early stages and to cope with them successfully.

The catalogue of failings and peculiarities is a long one, and you can undoubtedly draw up your own list. Before getting into it, let me emphasize that every person who sustains a hearing loss does not inevitably acquire the complete list. In fact, you may sidestep the entire catalogue—from A to Z. In any event, if you are equipped to recognize and understand these personality ills, you are already well on the road to overcoming them.

A person with deficient hearing may be excessively timid and lack self-confidence. To a greater degree than those with sound ears, he is likely to have a painful sense of inferiority and inadequacy. Or, overcompensating for the inclination toward timidity, he tends to cultivate a repellent aggressiveness.

He may turn morose and seem abnormally subject to fits of "blues." Brooding makes him unreasonably sensitive, not only about his hearing, but about other matters. He often becomes suspicious of other people and definitely anti-social.

These unforunate characteristics arise from the snubs, disappointments and embarrassments to which a person is liable when his relations with other people —with his social environment—are disturbed by faulty hearing.

Consider some of the situations in which such rebuffs may occur.

Suppose, for instance, a hard-of-hearing woman goes to a party and is introduced to a group of guests. One of them asks her a question, but not hearing it, she ignores the question and perhaps turns her back on the speaker. This is interpreted as gratuitous rudeness and when they meet again there is a coolness in the new acquaintance's manner. The innocent offender does not realize why. If similar experiences are repeated, she grows bewildered and starts wondering why she seems so socially unacceptable. A deepening sense of inferiority or resentment soon follows. The normal reaction would have been to say . . . "I'm sorry. I didn't hear that," but the deafened pull their heads back into their shells like snails and say nothing.

Or a man whose hearing is below par may fail to understand correctly certain information given him in his business. Consequently he makes mistakes and is criticized. If he does not recognize the real cause of his errors, he is bewildered and alarmed at the thought that he may be "slipping." If he does know why he misunderstands, he may fear that an explanation will further jeopardize his job, so he keeps silent. But still he will have a gnawing worry—a feeling of insecurity, and his effectiveness will suffer further.

Incredibly stupid as it may seem, I have lost money and let valuable opportunities slip by reason of this very consciousness of inferiority and insecurity. For many years I realized that I had "tin ears," but I was too stubborn—and vain—to wear a hearing aid. As a result, I built up in my mind a Rogue's Gallery of men I could not understand. Smith had a low voice. Jones mumbled. Snyder gargled. Black kept a pencil clenched between his teeth. Brown smoked incessantly, with a pipe or cigarette glueing his lips together. Allen had a Southern accent—and so on for an endless variety of alibis.

Since I could not hear my business associates properly, I forced them to repeat, and even at that, I often made embarrassing errors. I constantly felt that I was making a fool of myself. Obviously, this put a sense of constraint on our relations. Actually, I became *afraid* to meet them; I shunned them the way we avoid people to whom we owe money. And yet these men and women were my friends and co-workers, who were anxious to offer me the opportunity to participate in various advantageous deals. But when I grew "difficult" and kept out of sight, they naturally assumed I was not interested and sought other and more appreciative listeners. The climax came when I lost a considerable sum of money because I avoided consulting the very people who might have protected an investment. At least this jolted me into action . . . for once, I listened to my wife and began shopping around for a hearing aid.

A person who fails to hear properly is likely to give absurd answers which strike others as funny. They laugh—at his expense. Unaware of the joke himself, the poor devil can only grin feebly and try to be a "good sport." But certainly he is not amused. Everyone likes to laugh, but not to be laughed at. It takes a very rugged spirit to remain unaffected if the experience is frequently repeated. One of the standard stories deals with three men on a dining car. The first asked the conductor: "What station are we coming to?" "Wembly," replied the conductor. "That's funny. I thought it was Thursday," observed the second man. And the third spoke up: "I'll have a Scotch and soda. I'm thirsty too." With situations like these, the embarrassed victim has less and less desire to be with others. Instead, he seeks to withdraw into himself, and a habit of shyness develops.

Suspicion may also spring from these circumstances. After having been laughed at, the person with impaired hearing begins to believe that every smile, no matter what its real cause, is at his expense. When he does not hear what has been said, he assumes that he is being talked about. He thinks that the others have deliberately lowered their voices in order to pass uncomplimentary remarks about him. In an aggravated case, this belief may harden into a conviction of persecution, a delusion constantly becoming more deeply rooted because it provides a convenient excuse for every failure and misfortune—"No wonder I can't get ahead, everyone is against me."

The matter of humor-in-deafness has been commented on widely. There is no other disability which yields such a rich crop for the gag-men. I know of no joke about a blind man. There is a dignity and a sympathy-quickening property in blindness that

squelches the jokesmith. Only a few quips or cartoons are based on near-sightedness or wearing glasses For every one on that subject I am sure there are a hundred on poor hearing. A crutch, the token of lameness, is rarely if ever used as a guffaw-provoking prop, but I have seen many movies in which a character with an ear trumpet or a country yokel who kept pushing his ear forward, was the comedy relief. And how many humorous radio skits have been built around somebody's inability to hear plainly?

I do not know why this is so, nor have I ever obtained an adequate explanation. Perhaps it arises from the very fact that hearing is pre-eminently a "social" sense and that humor only appears as a manifestation of social living. It is hard, for example, to imagine Robinson Crusoe, alone on his island, laughing before Friday came. But whatever the explanation, poor hearing has long been material for the comedians and gag-men—thereby contributing to our sensitivity and reluctance to admit that we are ourselves "funny that way."

The difficulties of poor hearing take on special complications when they involve young persons. The teenage is one which even normally is colored by a sense of insecurity. The youngster, starting to break the ties with the parental home, which provided security in infancy and childhood, has not yet established a position in the adult world. At this time, any inadequacy, and especially that of partial deafness, is a heavy burden. Even more than their elders, youth is both lighthearted and unintentionally cruel, so that derision of a hard-of-hearing companion's wrong answers comes readily.

During the late teens and the early twenties, romantic attachments of vital importance to boys and girls are formed. But as a hard-of-hearing girl once ruefully commented, "What boy wants to shout 'I love you?' "

When it comes to matrimony, it should hardly be necessary to prove that the quality of one's hearing is not nearly so important as a host of other considerations, such as personality defects which might contribute to difficulties in marriage adjustment. And I know of many young men and women who have married the mate of their choice and, in doing so, have won out over rivals with far keener ears. Of course it is not easy to persuade an eighteen-year-old that what an older person *says* he knows is truly a fact.

But love will find a way. Recently there appeared in one of the service papers, the ironic story of a badly battered seaman convalescing at a Navy hospital. A Navy nurse—a gorgeous blond—noticed he was staring at her with concentrated intensity. The unblinking persistence of his gaze disconcerted her. Suddenly he scribbled a few words on a piece of paper, beckoned to her, and handed her the message without a word . . . "Beautiful," it read, "I am deaf and dumb—so that I cannot talk—but consider this note a whistle."

The psychological effects of unsatisfactory hearing set up a vicious circle, or perhaps it should be called a descending spiral, of action and reaction. The hearing disability causes the victim to follow a certain behavior path. This affects the way his friends and associates react toward him, and the latter's reaction in turn intensifies the original idiosyncrasy. To illustrate, someone who has trouble in social gatherings, at theatres, in church, will tend to go out to such places less and less. Finding little pleasure in group activities, he will seek recreation in solitary pursuits. He will spend much of his free time alone. Now, the oftener he refuses invitations, the less often he will receive them. Since he seems to shun people, they in turn will avoid him. Gradually he acquires a reputation for being "odd" or "moody" or "cold," and eventually even his friends alter their attitudes toward him. As all this drives him still more in upon himself, it is not long before a first-class recluse is in the making.

Moreover, when your intimate circle realize that you are hard of hearing, they may, if the condition is uncorrected, see you less frequently than they otherwise would. Talking to you requires that the speaker raise his voice. Speaking in a loud tone demands effort and, when continued over any considerable length of time, is fatiguing. It is not hard to see why someone may begin finding excuses to postpone seeing you if he must exert himself constantly to be heard.

Another reason that leads even the best-intentioned and most kindly disposed people to steer clear of the hard-of-hearing is the distaste which the majority of us feel at making ourselves conspicuous in public. In a restaurant or bus or train, no one likes to carry on a conversation at a pitch which reaches all the other diners or passengers for yards around. These others turn and stare in wonderment or disapproval. And the normally attuned individual (and perhaps his afflicted friend no less) feels acutely uncomfortable. He soon learns that the safest way to guard against such embarrassment in the future is to ease away and to stop going out with a weak-eared companion.

Aside from disturbed social relationships, the purely physical circumstances of deafness have secondary results that express themselves in temperament and outlook. Trying to listen with damaged ears is a drain on energy. When you do not hear well, you sit forward on the edge of your chair, your head thrust forward in an unconscious effort to get nearer the speaker, your gaze concentrated on his face—a pose which occasionally disconcerts the party with whom you are talking. Obviously, you become more tired than someone who is listening to the same thing relaxed and at ease. The strain may induce headache. If your hearing trouble happens to be associated with that particularly fiendish phenomenon, head-noises, your nerves are the more drastically frayed each day. Add this fatigue and nerve strain to embarrassment, frustration and uncertainty in social relations, and it is plain why the man or woman with dull hearing is so often jumpy, irritable, and sensitive about the thousand and one minor mishaps which are the lot of everyone.

In a sense, deafness, more than any other handicap, never permits a moment's relaxation. A blind person, for instance, may temporarily forget his sightlessness

at a concert, where we with vision deliberately close our eyes to concentrate. Or a man with one leg, seated in a comfortable chair, engrossed in work, may forget his condition until he has occasion to walk across the room. But we with defective hearing cannot let down our guard. Our entire lives are a challenge. As lip readers, we must constantly watch the mouth of anyone talking to us . . . when speaking ourselves, we must ceaselessly maintain the quality of our speech and diction . . . as psychologists, we must keep our brains eternally alert to translate motions, expressions, and the intangible nuances of human communication into the concrete terms of language. Even when we are alone, we dare not unbend . . . at any second a telephone or doorbell may ring, a visitor may enter the room unannounced and begin a conversation, someone may call us from downstairs or outside. And we must be prepared—to the best of our abilities—to react normally in these situations. Doctors claim Americans are a tense race. Under the circumstances, it seems to me that we, who are hard-of-hearing, have a wonderful alibi for tenseness.

Even though you are able to make a reasonably satisfactory adaptation in your personal relationships, and granted that your field of activity involves so little need for conversation that you do not experience the fatigue of close listening, you may nevertheless suffer psychological injury by being cut off from a normal perception of sound.

Ordinarily we give no more thought to the part sound plays in our lives than we give to the air we breathe. However, if we are deprived of air, we instantly struggle to regain our breath. The effects of being deprived of full appreciation of sound are far more subtle. It is quite possible to miss a good part of the hum of activity about us without even realizing our loss.

A normally hearing individual is constantly hearing sounds. While many of them do not reach the level of consciousness, they are nevertheless registering in the brain. The mind is constantly receiving them, sifting them, reacting to them. They provide stimulation which keeps it in a certain condition of alertness and aliveness. This holds true, even though you wear a hearing aid. For instance, when for the first time I switched my instrument on, I noticed an almost inaudible buzz, a gentle purring which indicates that the current is flowing. Not having heard any "background noises" for years, I was exceedingly disconcerted. But I soon grew accustomed to the effect and actually sought it. In fact, I wear my aid until I go to bed and sometimes actually fall asleep with it still in my ear. Unlike many deafened people, who shut off their instruments at every opportunity either to save their batteries or "to rest their ears," I have a peculiar sense of numbness, a feeling of being dead in the midst of life, if my aid is not turned on.

That a person reacts to sound even when it is below the level of consciousness is evidenced by the fact that someone who has been unaware of a ticking clock often becomes abruptly aware of it *when it stops ticking*. I have read that the Japanese sometimes keep caged crickets as "watch-dogs." The little insects chirp merrily at night so long as everything is serene. But at a strange foot-fall they stop singing—and the sudden silence wakes the householder up! In a similar way, I imagine, our savage ancestors went about their business with a sense of comparative safety while the forest about them was dimly alive with rustlings and bird-calls, but tensed to impending danger when all fell warningly quiet.

Admiral Richard E. Byrd speaks feelingly of this condition in his book, *Alone*. "In the middle of a task or while reading a book, I was sometimes brought up hard with all my senses alert and suspicious, like a householder who imagines he hears a burglar in the house. Then, the small sounds of the hut—the hiss of the stove, the clatter of the instruments, the overlapping beats of the chronometers—would suddenly leap out against the soundlessness, all seeming self-conscious and hurried. And after a big wind I have been startled out of a sound sleep, without understanding why, until I realized that my subconscious self, which had become attuned to the rattling of the stove pipe and the surf-like pounding of the blizzard overhead, had been unsettled by an abrupt calm."

The importance of sound, then, is not only that it carries ideas, as in speech, but that it conveys mood and feeling. This is most clearly exemplified, of course, in music where differences in melody, volume and tempo affect us in widely differing ways. A jig or reel stimulates to action, and whether we actually dance or no, our feet start tapping almost automatically. Martial tunes arouse courage and fighting instincts. Other themes soothe or make us pleasantly pensive.

For instance, all therapy in music (a vast field just now being opened up by experiment) is founded upon our ability to hear. According to one well-accepted medical theory, music sends out sound waves which operate by exciting peculiar sensations on the nerves of the ear, which in turn communicate with the brain and the general nervous system. Leopold Stokowski, in his book, *Music For All of Us,* says, "All living organisms are composed of cells. Each cell has its individual vibration frequency. If that vibration stops, the cell dies." And since music in therapy is used to affect our mental, emotional, and physical states—to vitalize and energize us—it follows that deafened ears can shut us off from most of its benefits.

However, these emotional effects of sound are not unique to music. We are affected by the sound of laughter or crying; the tempo of urban noise affects us one way; the gurgle of a brook another.

Says Admiral Byrd, speaking of his months alone in the solitude of the South Pole: "The room is a non-dimensional darkness, without shadow or substance; even after all these days I sometimes ask myself: 'Where am I? What am I doing here?' I discover myself straining, as if trying to hear something in a place where no sound could possibly exist. Ah yes. Tick-tick, tick-tick, tick-tick. The busy and friendly voice of the register and the thermograph on the

shelves, each distinct and dramatic—sounds I can understand and follow, even as a mariner emerging from the darkness of the boundless ocean can recognize and follow a coast by the bell buoys offshore."

The continuous strain of mingled harmonies and discords keeps the mind active and provides the substance with which it can work. To function most efficiently, the brain needs these materials. Countless numbers of the impressions it receives through the channels of the senses are stored away and become the building blocks from which thoughts and concepts are later constructed. Through our ears we obtain, literally, "food for thought."

When the normal flow of sound is obstructed or substantially diminished, a kind of mental and emotional "starvation" occurs, quite apart from the psychological ills induced by disturbed social relations. A considerable portion of imagination's raw material is shut off. Emotional "tone" is lowered, and the sensibilities may be said to become flabby.

The most important part of any human's life, of course, is its mental aspect. What goes on inside his head conditions all his actions and determines the type of person he really is. But your mental life, like a plant, cannot exist in isolation. It must put out roots through which it can receive nourishment. When hearing is impaired, the connection is lessened. A severely deafened person is like someone going through the world in a tight cage of glass. He sees everything about him, yet to a degree he is out of touch with it, and partly separated by an impenetrable wall from the fabric of life.

In a certain sense, the effects of years of enforced silence are somewhat akin to the effects of solitary prison confinement, certainly a drastic form of punishment. In ancient times, one of the most extreme penalties was that of exorcism—cutting off the offender not from all life but only from that community life in which he had put down his roots. Ruth Brickner, a psychologist, has said, "When the deafened person finds that he can once more communicate with his fellow men it must be as though he were born again. Human beings happen to be social beings. They receive a *biological sustenance* from gregarious living."

Dean Babbitt, the president of Sonotone, often speaks of an experience which indirectly led to his entering the hearing aid industry. About fifteen years ago, a friend sought to interest him in providing funds for a bone-conduction instrument, and Babbitt, rather reluctantly, consented to visit the inventor's office. He waited in the reception room and with idle curiosity watched a salesman adjust the device on a grandmother. The salesman made a casual remark, whereupon the old lady went into hysterics. With tears streaming down her cheeks, she cried, "I can hear . . . I can hear." The experience impressed Babbitt so deeply that he wanted to be in a business which made it possible for people to live again.

6 The Way Back

Once you appreciate the possible ill effects of poor hearing, you are less likely to fall prey to them. But mere knowledge of the results of aural impairment is not enough; the question is—what steps can you take to cope with the condition?

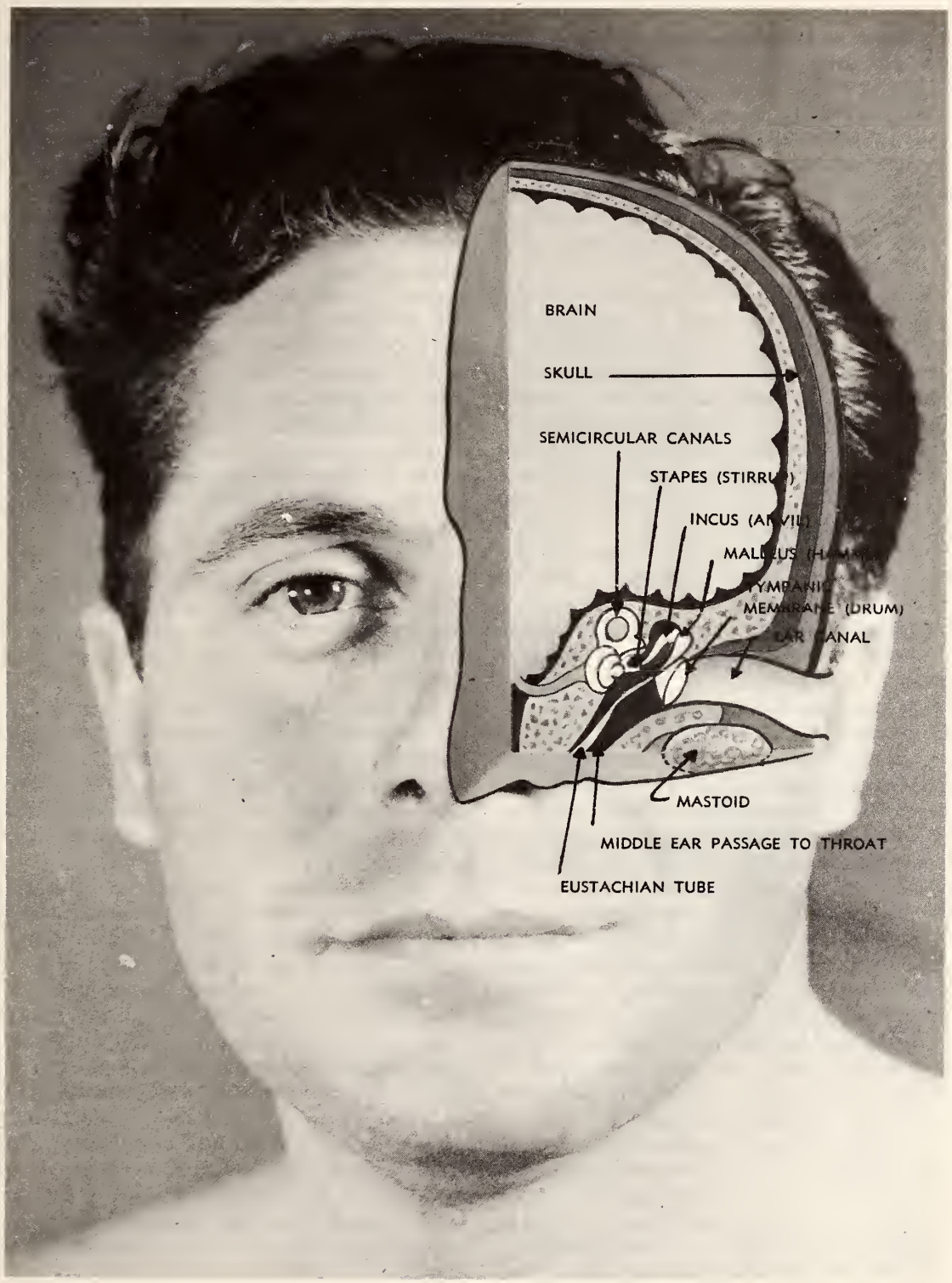
The first thing to do, we repeat, is to consult a doctor—preferably an ear specialist. This advice may appear superfluous to the point of absurdity. Seeing a physician for any bodily injury is the obvious course to take; why make a point of stressing it?

First, because seeking scientific advice at least constitutes an admission that something may be wrong with your ears. And, as we have seen, the psychological effects of partial deafness often include an attempt to conceal the fact, even from yourself. Second, because even when a deficiency is admitted, the victim usually underestimates its extent and considers a visit to an otologist scarcely worth the trouble. Third, because medical men agree that a great deal of hearing is lost unnecessarily, which if attended to earlier could have been saved.

If a doctor can do nothing to improve your natural hearing—and this holds true in most instances of definitely noticeable hearing impairment of long standing—it does not mean that he can be of no service. If he cannot undo the damage to the ears, he can protect them against additional injury. And this is very important. The less hearing you have, the more precious is that which remains. Everything should be done to guard and husband it. Even a small residue, properly utilized, can be a path connecting you with the rest of the world and an aid to more fruitful, enjoyable living.

Sometimes a hard-of-hearing person who has had his ears examined and has been told that the loss cannot be remedied feels there is no use in further examinations. He should still, however, make periodic visits to his ear specialist. He should go to have his ears "checked and serviced" just as one takes his car to a service station for checking up and prevention of unnecessary wear. In particular, a doctor is "a must" during colds or any other illnesses which carry the risk of endangering the depleted treasure.

When you become aware for the first time of a handicapping loss and are told that it can never be restored, you face a severe test. Often hope dies hard, and you go from doctor to doctor seeking a genius who will promise at least a partial recovery. In this despairing search you may come to some unscrupulous medical man who will hold out the possibility of cure merely


BRAIN
SKULL
SEMICIRCULAR CANALS
STAPES (STIRRUP)
INCUS (ANVIL)
MALLEUS (HAMMER)
TYMPANIC
MEMBRANE (DRUM)
EAR CANAL
MASTOID
MIDDLE EAR PASSAGE TO THROAT
EUSTACHIAN TUBE

to increase the number of visits and the fees collected. Eventually the promises come to naught, and you lose faith. But like Christian in *Pilgrim's Progress,* you continue your quest, ending up too often in the hands of an out-and-out quack or in trying useless or downright harmful appliances and fake nostrums.

Knowledge of itself is no protection. I once had an uncle, a skilled chemist, who was infuriated because I refused to follow his advice and send 25c in stamps for a "magic ear oil" advertised in a questionable magazine Obviously, such a course is not merely a waste of money but it delays the taking of reasonable and realizable steps. And by piling disappointment upon disappointment, it leads to a feeling of complete frustration and hopelessness.

If a competent otologist has told you that your hearing cannot be improved by medical or surgical treatment, you may want to compare his judgment with that of a second doctor of good reputation. But if the second man's prognosis is the same, do not seek endlessly for others who will give you more cheerful news.

Accept the finding as fact. Realize that impaired hearing cannot be cured as, for example, pneumonia is cured. It will not heal as a broken arm heals. The power that has gone from you is lost just as much as a pulled tooth is lost, and it can no more be restored than a new tooth could be made to grow in place of a lost one.

If your deafness has been with you for a long time, you have probably already come to the conclusion that there is no hope of regaining your hearing. But you may have failed to take the next step of resolving to compensate for the loss.

Since the condition cannot be cured, some means must be found to "get around it." The first thing to do, as we have already pointed out, is to take a kind of *personal inventory* to discover whether you are compounding the physical problem by building up handicapping habits of thought and conduct.

Avoid acquiring an emotional attitude toward your hearing loss. Guard against getting into a "state" about it. Use your mind, not your emotions. If the loss occurred recently, you may experience a feeling of panic. Summon up your will power to overcome it. If the loss is of longer standing, you may have fallen into a state of numbness, half despondency, half resignation—a conviction that nothing can be done. Snap out of it—you cannot afford to indulge in self-pity.

I do not underestimate the difficulties and limitations of poor hearing. But there is no cause for panic or despair. You must face it calmly. Like drowning, if you begin to struggle, you are lost. In the great majority of cases much can be done to surmount your deficiency; certainly it need not debar you from any achievement within your capabilities *were you not handicapped.* In the words of the immortal Browning, "Ah, but a man's reach should exceed his grasp." That a man can be master of his destiny is not Pollyanna philosophy, but an accepted truth!

To combat this very natural tendency to depression, remember that nobody is physically or intellectually perfect—the acme of strength, beauty, grace, wit, mental endowment, athletic prowess, artistic skill. Nature and science have combined to produce a norm —but who of us approaches even this standard—let alone perfection? Everyone has his own weak points . . . perhaps you personally are too self-conscious about yours. It may be a poor consolation, but you have plenty of fellow passengers in the same boat. The great majority, with perfect hearing, suffer from other physical or mental weaknesses. In every case, the individual has his problems, be they large or small. If it seems to us at times that our friends have all the breaks, it is simply because they do not reveal their anxieties and defeats or because their troubles appear much less important than our own. Actually, "the Lord makes every back to bear its own burden."

Hearing is your problem. It is my problem also. You and I must set ourselves to meeting its demands just as any adult individual must set himself to overcome adverse circumstances—if he hopes to succeed.

Stop brooding about your ears. Rather concentrate on what you can do to add to your contacts with the world about you. Focus your attention on the use that can be made of the capacities you do have. Think of the adage about the difference between the optimist who see the doughnut and the pessimist who sees the hole. Don't waste your energies lamenting the hole in your hearing. Why be a sadist and torment yourself, worrying about what you haven't got, when the same brain-power could go into making something of what you have?

Rid yourself of any sense of shame or guilt about your impairment. To confuse sub-par hearing with sub-par brains is as out of date as a belief in witches. Don't attempt to hide it. Rather, if necessary, make a virtue of your necessity, even if you have to emphasize it. Resist any impulse to avoid companionship and to withdraw into a shell.

There is no valid reason for not speaking freely of the state of your hearing. This does not mean, of course, that you should go out of your way to buttonhole people about it and make a bore of yourself by constantly referring to it the way some persons endlessly rehearse "my operation." But whenever it is normal to do so, mention it, not with embarrassment but casually. Imitate some of my left-handed friends, who say to me, when we take seats at the same side of a luncheon table, "Let me sit at your left; if I'm on the other side I'll be jabbing you with my elbow all during the meal." Needless to add, they never offer this comment with the slightest implication that there's anything wrong with being left-handed! Quite the contrary, they'll probably quote all the statistics on left-handed genius.

Indeed, your aural autobiography can even be jocular. I know a man who lost an eye under tragic circumstances. Yet he has used the accident as material for a witty and fascinating conversation piece. In plain language, learn to smile at your troubles.

If you are in a group that chuckles at some remark you missed, realize that the chances are a hundred to one against your being the butt of their joke. There is a

fine distinction in laughs between the genial appreciation of a really ludicrous "boner," and the mocking derision of a lout. If you do meet people who are so thoughtless as to cackle at every auditory stumble, you can be certain they are the type who would at some time make sport of your clothes or weight or some other personal quality. You can afford to dispense with "friends" like these, and only feel sorry for their mental poverty. But if you can't overlook their banter, join in it and turn the tables on them. In this world of hard knocks, a sense of humor is a saving grace, and the hide of a rhinoceros the best protection for a sensitive heart.

If you have caught all but part of a comment or story, don't hesitate to say so and ask to have the bit you lost repeated. Repetition may be the mother of memory and the father of boredom, yet this should not deter us. Some of us are so self-conscious about our failing and so fearful of being a nuisance that we do not request an encore when we should. Remember that people with normal ears often ask that a remark be repeated—and no one thinks anything of it!

And if one of your ears is better than the other, insist that people sit on that side. Don't, however, get into the habit of expecting others to reorganize an entire seating arrangement for your benefit. Quietly do as much as you can for yourself. Don't impose your hearing problems on outsiders or strangers. A reasonable, normal balance is the ideal at which you must always aim.

I will never forget the advice of a famous ear specialist when I complained of my hesitancy in asking people to keep their voices up, so that they would not have to review their remarks.

"What can I do . . . I'm embarrassed at constantly saying, 'pardon me'?"

"Just tell them . . . 'I'm sorry. I'm hard of hearing. Will you please keep your voices up?' "

"It'll be all right for a moment or so, but then they forget, and go back to a mumble."

"Then say: 'I told you I was deaf. Please speak plainly.' "

I was not impressed. "That'll keep them going for five minutes—but they'll drop in the groove again."

"Humph," snorted my irascible adviser . . . "tell them, 'I'm too blankety-blank busy to listen to you anyway' . . . then walk out of the room and slam the door."

7 Screen Test

Not only are the mental quirks and the psychological effects of deafness to be avoided, but we must also guard against certain nervous impulses (technically called motor habits) often associated with bad hearing. Foremost among these are a number of characteristic facial expressions. Indeed, experts claim they can walk along the streets and detect people who are acoustically handicapped by "the deaf look." Pressed for an explanation, they define this look as an expression of strain —a puckered brow, with head slightly cocked toward the source of sound, a narrowing of the eyes brought about by intent scanning of others' faces for a clue to what they are saying. Or it may be the blank, vacant stare of chronic uncomprehension.

Habits of speech—volume of voice, intonation and enunciation—are also likely to be affected. A normally hearing person unconsciously pitches his tone to the noise level of the surroundings. If he is in a very clamorous place, he automatically speaks more loudly so that whomever he is addressing will hear him. But if your hearing is bad, you cannot realize the amount of surrounding hubbub to be overcome. Further, in some types of aural impairment, you hear your own voice quite audibly even when you are speaking in a very low tone. Therefore, although it seems to you that you are shouting, you may actually not be using nearly enough power to be audible. In other types of impairment, you sound muffled even when you are yelling. The result is that you assail the ears of those about you with a blast many times greater than the occasion requires.

Some hard-of-hearing persons alternate between the extremes. Realizing the difficulty they have in controlling their voice level, they speak very quietly. Then, recognizing from the listener's expression that their tones have become too low, they suddenly sound as though someone had turned on a loudspeaker. In a few moments they forget about maintaining the energy they are putting into their words, or they become tired, and the blare fades away. Needless to say, this is disconcerting to an audience.

In recent years, I have had great difficulty keeping my voice at a proper level—because I cannot judge with accuracy how I am talking. In fact, my voice always appears to me more raucous than it actually is. The trouble is complicated by a number of my relatives, with unusually keen hearing, who were in the habit of shushing me down, until I was almost afraid to whisper. Nowadays, I often notice waiters and salesclerks leaning over to catch what I am saying, until I suddenly realize that they cannot hear me. And sometimes, I wonder if they, too, are fellow sufferers.

It all boils down to the fact, previously noted, that the ability to speak is not instinctive, but is an acquired skill. Like any other acquired technique, it deteriorates if not practiced. Moreover, if errors creep into the speech and go uncorrected, they are repeated until they become deep-seated.

And everything that has been said about volume control also holds good in regard to pronunciation and enunciation. We speak by ear, unconsciously moulding

our own performance on what we hear. As Elizabeth Ferguson von Hesse points out in *So To Speak:* "Since the tongue is trained by the ear, when the ear ceases to give accurate attention, the tongue grows careless and awkward, and clumsy speech is the result."

Thus a normally hearing person subconsciously but constantly keeps his own voice tuned and adjusted by hearing his own words and those of others. Even at that, he tends to mimic those with whom he most closely associates, whether mumblers, mouthers, or ski-speakers. Hence, too, regional dialects, slurred vowels and consonants, foreign accents, and other peculiarities. Indeed, the secret of cleancut speech is contained in the phrase, "intend to be heard." And it therefore behooves us to keep an extra close watch on enunciation and to cultivate good diction.

Because speech is such a common activity, we do not generally appreciate the infinite delicacy of the process. The diaphragm, for instance, demands exquisite precision of muscular control to regulate the amount of breath directed against the vocal cords Similarly, the vocal cords require an exact adjustment of rate of vibration to that of the tongue, lips and jaw in articulating. The most minute variation of the position of the tongue in uttering a particular speech-sound will alter its value. We seldom consider the tremendous variety of vowels and consonants, and their almost infinite combinations in thousands of commonly used words. We disregard the lightning-like rapidity with which tongue, lips and all the other organs involved in utterance adjust for talking at only an ordinary speed. But we must realize that this is one of the most delicate muscular skills we humans possess, a skill beside which the finger dexterity of a master pianist or surgeon, or the muscular coordination of a top-flight golfer or baseball player are crude and gross.

Control of the speech-organs is governed by a *mental image of the sound we want to produce.* We first inwardly visualize a picture of the sound and then adjust the various vocal muscles to form it. This process is perhaps most obvious in singing; we must have a concept of a melody before attempting to sing it. The concept is based on hearing. In fact, hearing is so important to speaking, so inseparable from it, that the ear is called "an organ of speech."

Now, if you do not hear clearly, the concepts of various speech-sounds stored away in your mind may grow blurred. Consequently, when you try to duplicate them in the form of spoken words, the reproduction is faulty. And, not hearing the conversation of others clearly, you have no adequate means by which to refresh memory and thus keep the images sharp.

Not only may concepts of speech-sounds become obscured through forgetting; they may be actually distorted by improper hearing. Suppose, for example, that you had a hearing impairment which made "ah" sound like "uh." The first time you heard of the island of Tarawa, you would hear it as "Tuhruhwuh" and would henceforth refer to it with that pronunciation. This would apply not only to newly learned words, but also to terms with which you were familiar before your hearing was damaged. "Father" would sound like "futher" and, constantly understanding it that way, you would so tend to pronounce it. In other words, the hearing of a distorted sound warps the mental image, and it is this out-of-focus picture which, in time, becomes the one habitually reproduced.

The effect upon a listener of what you say comes not merely from the ideas conveyed by the words themselves but from their tone and emphasis. Depending upon how they are delivered, the same words can convey approval or disapproval, friendship or sarcasm. Here again, appreciation and use of these nuances of speech depend on continuing awareness of them through hearing. Like their mental images, the possibilities of intonation and inflection become dim in memory if not regularly refreshed. Therefore, if you are hard of hearing, your voice tends to become flat, monotonous, unexpressive.

A news item, commenting on Hitler's 1945 New Year's address broadcast throughout beleaguered Germany, provides an interesting comment on the possibilities of imperfect hearing. Many listeners in the Allied world claimed the voice did not sound like that of the Nazi leader; they speculated that he might be dead and that an actor might have taken his place at the microphone. The news dispatch offered another hypothesis—that Hitler's hearing had been damaged. It reads:

> Adolf Hitler's hearing was impaired in the attempt on his life last July 20, according to a rumor circulating in Germany, to such an extent that he can "no longer judge the sound of his words, nor can he use tones of irony or contempt, or his famous false heartiness."
>
> The office of War Information said yesterday the rumor was relayed by a Swedish traveler to the Stockholm *Morgentidninger,* which commented that ear trouble might explain "the hurried speech and entirely un-Hitlerlike presentation" of his New Year's address.

Similarly, in the months just preceding President Roosevelt's death, there were reports in the American press about a noticeable deterioration in his hearing, ascribed by some doctors to "sinus trouble." According to one notice:

> A number of reporters have concluded that the President's hearing is not as good as it might be because apparently he doesn't catch press conference questions as readily as he once did.
>
> But Admiral McIntire said Mr. Roosevelt's left ear had always been 'a little down.' Another auditory check might be in order, however, he said, because none has been made for some time.

The Admiral offers sound advice in his suggestion of an "auditory check." But regardless of any such diminution, no one who has ever heard Mr. Roosevelt speak, either in person or on the radio, will forget his diction and delivery. His rich, vibrant greeting "My friends"—was more than a trademark; its sincerity and sympathy aptly symbolized his love of mankind.

8 Machine-Made Hearing

Most of us today can go a great way toward solving our problems by skillful use of electrical hearing aids.

The employment of various devices to bring more sound-energy to damaged ears goes back before recorded history. The simplest method, cupping the hand behind the ear, was probably practiced by the caveman. More sound waves are directed into the ear canal by this means and we hear more plainly. In very early times the horns of animals were used to funnel sound into the ear, and later, other types of ear-trumpets and speaking tubes were employed.

The first electrical hearing aid was made by Alexander Graham Bell, a teacher of the deafened and the husband of a wife similarly afflicted. Indeed, his invention of the telephone was really a by-product of his efforts to help our group. The early aids utilized a carbon system, similar to that in telephones, for the amplification of sound, and had a large pill-box type receiver, clamped over the ear by a headband.

The instruments were steadily reduced in size and increased in power. In 1932, an important forward step came with the invention of a new type of receiver, a bone-conduction "oscillator," which was worn behind the ear instead of upon it. By conducting the vibrations of sound through the bones of the head, "detouring" the middle ear, it made mechanical help possible for many who could not be substantially aided by the previously existing air-conduction receivers, which delivered sound to the normal auditory channels.

In 1938 instruments with vacuum tubes in the amplifying system were introduced. These were very large by current standards and were offered as "table" or portable models, rather than as instruments to be worn on the person. However, advances were rapidly made in aids of this type too, and today the vacuum tube devices are marvels of compactness. One recent type, for instance, carries both batteries and vacuum tubes inside the transmitter, thereby eliminating all but one connecting wire, and streamlining the whole attachment into a single unit.

In that large percentage of cases where he is unable to restore any substantial amount of hearing, the otologist may suggest to a patient that he obtain such an instrument. Yet, however desperate his need, the patient is apt to offer considerable resistance to the doctor's recommendation.

There are several reasons for unwillingness to take a step which is dictated by considerations of personal safety, general health, earning power, social and family relationships and more enjoyable living. One is the feeling that hearing trouble is something to hide. Wearing an aid is, of course, a definite admission of aural impairment. If it can be seen by other people (as is always the case with men, who cannot conceal the earpiece beneath their hair as women do) it is an "advertisement" that the wearer is hard-of-hearing. I have already described how the wish to hide partial deafness arises from a sense of shame and from the fear of being laughed at. And we have seen how baseless both these attitudes are.

Allied to these feelings is one of false pride—the wish to be physically perfect and not to reveal any defect. This is an illogical position to take; first, because physical perfection is a quality so rarely met with, and second, because there are so many other qualities of mind and character on which one should depend for self-assurance and self-esteem.

This same sort of false pride used to attach to the wearing of glasses but has now almost completely disappeared. Indeed, today we see girls in their 'teens that most sensitive age, deliberately wearing "costume" glasses as accessories, when on dates with young men and on other occasions when they want to appear most glamorous.

A natural desire not to be conspicuous also deters many from using hearing aids. They avoid the devices for the same reason that they do not wear outlandish clothes or do anything else which would make them "different" from the crowd and might consequently attract curious stares. However, such a reason no longer holds weight. Hearing aids have become so common that no one gives them more than a passing glance. If people stare at you, it is probably because they are dazzled by the pattern of your necktie or the tilt of your hat. Moreover, the person who needs an aid but refuses to wear one is often more conspicuous by reason of his mistakes in understanding what is said to him or by his lack of proper voice control than he would be because of a cord and a button in his ear.

Children share the average adult's dislike of audicles, and have a special reason of their own for avoiding them. Teachers in general believe that the intelligent child is more likely to use any device necessary to keep up contacts with the outside world. The social stigma attached to wearing an instrument has greater meaning for the less successful, poorly adjusted youngster.

Children who need and use hearing aids get along better in school and elsewhere than without them. The youngsters themselves say that if they started to wear them at 5 or 6, the adaptation would be more gradual and easy. But the girls complain they look bad and interfere with styles, and the boys resent having to wear jackets all the time and being unable to play games—especially active ones. To say the least, the wires and batteries inhibit freedom of action, and if they drop and smash any part of the machine, it's a lot harder on the pocketbook than a broken window or even a pair of shoes.

I realize what an annoyance this situation can be. For years I have gone swimming at an isolated beach on the Cape, about an hour's walk from the nearest town. Often I would accompany a party who expected to spend the entire day on the beach. I was always apprehensive: Should I leave my instrument at home and

miss most of the conversation, or should I take a chance of something happening? Aside from sudden showers and the natural dampness of the seashore (especially on foggy or rainy days), I was constantly afraid of a prowling dog chewing up the wires or of a passer-by stepping on my clothes and crushing the aid in a thousand pieces. And, of course, it is practically impossible to relax for a sunbath, wearing nothing but trunks, or to sprawl reading in bed on a hot night, attired in shorts, because you must have a pocket or a bag-like contrivance strapped to your body to hold the mike and the batteries.

Although all the children complain about hearing aids—even those who refuse to wear them at all—they will use them at the movies, where it is dark and no one can see them. Thus they become enthusiastic movie fans . . . if possible, even more so than other children who are not handicapped.

The greatest single influence in overcoming aversion to hearing aids—an aversion which has kept uncounted numbers in a muffled world—has come from the hearing aid manufacturers and distributors themselves rather than from the doctors and social workers. Motivated largely by profit rather than altruism, these men of commerce have been able to raise the necessary funds; and they have applied the propaganda forces of advertising to let the general public know that deafness is not a rare thing, and that hearing aids are simply a tool used by sensible people.

True, some people who would be helped, refuse to get an aid because, subconsciously, they actually enjoy being handicapped—like the neurotic who plays sick to hold the center of the stage. Such individuals have found that their impaired hearing leads their families, and perhaps outsiders, to make special allowances for them. It provides an excuse for failures and for avoiding responsibilities. It gives plausible grounds for withdrawing from many of the struggles of life. Obviously, such behavior is selfish and stultifying. These persons are not making proper use of the gift of life. They are not meeting their obligations either to themselves or to others.

Hysterical deafness offers the extreme example of escaping from the demands of living by cutting one's acoustical ties with the world. The victims actually lose the power to hear although there is nothing wrong with any part of their ears. Yet they are not to be censured; the injury to their psyches is as real as a physical injury to the ear mechanism. The roots of their disturbed emotions are so far below the level of conscious thinking that they would not believe it if they were told that their disability was entirely mental. Their deafness can be cured only by the treatment of a psychiatrist or some other medical man skilled in psychotherapy, by a change in the circumstances which brought on the condition, or by the healing effect of time.

I know a woman who, when her first child was small, was abnormally anxious about his welfare. She was so fearful that some harm would come to her baby that she would not accompany her husband out in the evening, even though she had a reliable nurse to stay in the house. She worried about every slight cold or indisposition the baby had and, when he was entirely well, fretted about diseases he might get. She would allow no one else to prepare his food or care for him.

By the time the little fellow was two years old, the mother suffered a nervous breakdown and lost her hearing. She was profoundly deafened for a year; then her condition quite suddenly returned to normal. The diagnosis was that an exaggerated sense of duty led this woman to give her baby undue attention, but deep within herself she also rebelled at being a slave. Her subconscious resolved the conflict by making it impossible for her to hear his cries and demands. I might add that this woman subsequently had a second child who was permitted to grow up with no more than the usual amount of care and from whose babyhood she derived much greater enjoyment.

If you are one of the large number of hard-of-hearing people who are neither neurotic nor hysterical, you can be helped by an electrical aid. So I say again—and again—by all means acquire one. It will enable you to make more effective use of one of your most important sense organs. It will forestall the possible development of handicapping psychological ills. What is equally important—it will help prevent further deterioration of hearing ability. I do not mean that it will actually increase your power to perceive sound with unaided ears. But it will keep alive your *attention to sounds* and your ability to *derive meaning from them.*

Many people with damaged ears progressively hear less and less even though their impairment is actually not growing any worse. Finding listening a strain, they weary of the effort to concentrate on sound and eventually pay little attention to it at all. This inattentiveness becomes habitual and in its effect is the same as though the person's physical hearing equipment was weaker. Actually what has happened is that the desire *to use the equipment* has diminished. It is as though you had a radio in your house but rarely played it, because you kept it in a closet behind a lot of boxes and trunks. Imagine scrambling over these obstacles every time you wanted to turn it on. Obviously, you would not use it so much as if it were easily accessible in the living room. Similarly, a person with undamaged ears might be said to keep them "in the living room"; he can employ them without exerting himself and uses them almost automatically. But if, deep in thought or lost in reading, he does not pay attention to sound, he becomes just as deaf when absorbed as though his auditory nerves were dead.

In fact, some deafened persons develop a vagueness and perpetual absentmindedness that puts the traditional professor to shame. They pass through life in a dismal daze—lacking the energy and determination to pay attention. "It is the disease of not listening, the malady of not marking, that I am troubled withal." One of my friends—a brilliant young woman, found this habit growing on her. So, as a reminder, she nicknamed her instrument "the listener," for she believed

it forced her to "put on the steam." While the notion is a quaint idea. I rather like it. In radio to *listen in* means to adjust the receiving mechanism of a wireless apparatus so that one is brought into connection with a sending station. A hearing aid offers an exact parallel . . . with the person speaking to you as the sending station. So think of your machine as "a listener"—the analogy may be helpful.

Once the decision is made—either through your own volition or that of your doctor—to secure an instrument, there comes the all-important question—what make and model. Like the woman with a fat bank account and "nothing to wear" reading beguiling advertisements, you may grow dizzy from contemplating an embarrassment of riches. For certainly every company will more or less subtly try to persuade you that deafness can be a pleasure if you only purchase its unique and incomparable aid. Here, for perfectly understandable reasons, the medical profession cannot assist you in your final choice to the extent that you would like.

Primarily, hearing aids are miniature radios. The problems involved in selecting and fitting them concern engineers and physicists rather than otologists. The latter may possess instruments and apparatus adequate enough to appraise deficient hearing in the pathological sense, but not sufficiently delicate for exacting acoustic measurement.

Hence, partly because of the elaborateness and expense of the testing equipment, the average otologist can scarcely be expected to evaluate your hearing according to the most modern scientific methods. He seldom owns an audiometer, or the newest style tuning forks, fitted with an automatic release to ensure the same number of vibrations, whenever used. Mostly he must depend on striking an old-fashioned tuning fork against the edge of his desk, or he may stand in the doorway, calling numbers in a low tone like a football quarterback. But each test differs according to the vigor put into the flip of his wrist or the intensity of his whisper. Unless you are fortunate and have access to an extraordinary doctor in this respect, you will do well to inquire whether your local League for the Hard of Hearing offers an audiometric test, or whether a neighboring hospital, for a modest fee, will help you out. True, all the companies will give you a perfectly competent test free of charge, but I prefer having objective advance information which might guide me in choosing the particular aid that would best fit my needs. Fortunately nearly all the instruments on the market are sponsored by reputable manufacturers. On page 89 you will find a list of hearing aids accepted by the Council on Physical Medicine of the American Medical Association.

If, however, you find it more expedient to be tested by the representatives of a hearing aid manufacturer, practically all the outstanding companies (with the exception of the maker of a recent popularly priced model) are prepared to give you free audiometric tests at their various offices. An audiometer, as you know, is a machine for estimating the degree of hearing loss for a large number of different tones. Technicians use the machine not to determine the causes of an aural impairment, but to get answers to such questions as whether the receiver should be worn on the right or left ear, whether it should have a bone- or air-conduction receiver; whether the instrument should be a powerful model or not; whether it should be "tuned" to amplify some tones more than others or all tones about evenly.

The audiometer operator tests both your ears. The moment you perceive the faintest stirrings of sound, he marks down on a chart the exact degree of loudness necessary to produce your reaction. The resultant graph is called an audiogram. The record expresses in decibels the extent of your impairment.

The decibel (named for Alexander Graham Bell) is a unit of measurement of sound intensity. Since hearing losses expressed in this way are not likely to mean much to you, it might help to consider decibel readings in terms of the distance at which an average conversational voice can be heard. A person with no loss of acuity can presumably hear such a voice, in still air and under conditions of perfect quiet, from a distance of about a quarter of a mile. Of course this is a highly theoretical situation, but nevertheless it shows the magnificent sensitivity of a perfect ear. A person with a 50 decibel loss could follow the dialogue at a distance of four feet. Someone with a 70 decibel loss at a distance of only four inches.

Or to use a different basis of comparison: an individual with a 40 decibel loss is about as deafened as one with undamaged ears in a noisy office. With a 50 decibel loss, the difficulty is approximately the same as a normal hearer experiences in a moving railroad car. A 60 decibel loss is the equivalent of the noise handicap to sound ears in an engine room; while an 80 decibel loss reflects the acoustical disadvantages of life in a boiler factory.

Not only the degree of loss but where it occurs in the range of audibility is significant. Although the human ear can perceive sounds considerably lower and higher, the tones necessary for understanding speech are those extending from around middle C in the musical scale (produced by a string, or other body, vibrating 261 times per second) upwards about four octaves.

Most of the speech sounds of our language are scattered within that range. Some of them (especially the sibilants, such as "s" and "f," which are uttered, without use of the vocal cords, by expelling breath between teeth, tongue and lips) occur at the upper end of the register. Most of the vowel sounds have their principal frequencies at the lower end. A person who has an impairment in only a part of this four-octave scale can hear some speech-sounds, but possibly not enough to make out entire words. It is estimated that anyone who hears tones up to an octave above middle C can distinguish only about 5 per cent of speech sounds; up to two octaves above middle C, he can perceive about 45 per cent; up to three octaves above, 75 per cent; and up to four octaves above, 90 per cent.

Yet under some circumstances, a deafened person should not wear an instrument. With active diseases of

the ear, the use of one may be unwise. For example, if there are discharges or if the skin of the canal is irritated, an air-conduction receiver might aggravate the condition, but a bone-conduction receiver might suit your needs. Moreover, when the hearing loss applies only to tones higher than four octaves above middle C, an aid is of little or no practical value.* Or, provided the deterioration is not greater than 25 to 30 decibels, an aid is not necessary. In this latter case, however, it would be well to have tests made at intervals of six months or so, to detect any change. Where one ear is deafened and the other can take over, there is no need to rely on an instrument. But if you cannot comprehend fairly loud words when the speaker's lips almost touch your ear, then your loss may be so severe that no device will magnify clearly enough for you to understand speech. These conditions, of course, should be determined by means of audiometric tests and other adequate measurements. Even so, some of us with a severe degree of impairment obtain considerable satisfaction from an instrument, merely because of the mental stimulation obtained from any amount of sound we can receive, and from the additional clues thereby provided as to what is going on about us.

* In many of us, hearing power diminishes as we grow older. This loss begins at the upper limit of audible sounds and extends down the scale with increasing age.

9 Consumer Research—Make and Model

Even if your physician has managed to put you through a scientific test, he is still apt to be annoyingly casual if you ask him point blank . . . "What particular make should I buy?" He will probably wave his hands and murmur . . . "Ah . . . I really couldn't say . . . The best instrument for you is the one that enables you to hear best. You'll have to try a few of them out."

This medical vagueness has always baffled me, since a doctor never hesitates to specify drugs made by particular pharmaceutical manufacturers in his prescriptions for medicine. And an oculist, while making plain that a patient may have a prescription for eyeglasses filled wherever he chooses, still, as a matter of course, frequently recommends an optical house that he considers especially reliable. I suspect the explanation for the absence of specific directions is that there is no official standard for hearing aids similar to the U. S. Pharmacopoeia standards for drugs. And, unlike eyeglasses, they are such complex mechanisms that the doctor, despite his wealth of information about the structure and working of the ear, lacks sufficient knowledge of physics to evaluate the instruments himself.

Also, there was formerly a certain amount of hostility in the medical profession against hearing aid manufacturers. The doctors approved of hearing aids in the abstract, but they were diffident about certifying any particular maker of the devices. Their antipathy resulted partly, and with justice, from the exaggerations and sweeping assertions in hearing aid advertising, and partly from the medical profession's traditional opposition to laymen knowing much about human ailments or doing anything to alleviate them unless under the profession's direction.

Even disregarding this state of affairs, what can the poor doctor do? If he suggests half a dozen aids for your inspection, you are no better off than before. If, on the other hand, he designates *one*,—and you are eventually dissatisfied with the recommendation—he may lose you as a patient. Worse yet, if you are of a cynical temperament, you may suspect that he has received a kick-back from the favored company.

Today co-operation between the physician and the hearing aid manufacturer is well established. In some of the large cities, certain otologists have made themselves hearing aid experts. And the average physician is inclined to acknowledge that he is not so well-equipped as the physicist to understand the phenomena of acoustics and electronics, and that it takes a commercial organization to produce, distribute, and service the instruments. On his side, the manufacturer now appreciates that diagnosis and treatment of disease or injury is the province of the physician, requiring knowledge which the physicist, manufacturing expert, or marketing executive does not possess. He has come to realize that laymen—in this instance, his own sales force—may become fascinated by the medical aspect of their work and assume they know more about it than they do; that, inasmuch as "a little knowledge is a dangerous thing," they must not trespass on the physicians' prerogatives; and that they should ascertain in advance whether their clients have had medical attention.

Another point to be considered—and a very controversial point at that—is whether prospective buyers should be allowed to try an instrument for a week or two before purchase. In the various salesrooms, you are tested in sound-proof booths, often by lovely young ladies with bird-like voices. Consequently, you are frequently misled by "the improvement" in your hearing. But when you take your new purchase to the office, with the telephones jingling, the typewriters clattering, and the gum-chewing stenographers lisping, you are building up to a terrific let-down.

Some manufacturers permit you to take out their product on approval; others do not. Leagues for the Hard of Hearing and certain doctors recommend that an instrument should not be bought unless such a trial is granted. Yet the companies who have an opposing policy maintain that to encourage self-tests is actually a disservice to the client.

I should like to advise your refusing to purchase any instrument unless the dealer gives a minimum three-day period in which to familiarize yourself with it. Not that my attitude is founded on bitter personal experience. Quite the contrary. When I first put on an aid, I wore it steadily thereafter, with far less discomfort than the strain of "breaking in" a new pair of glasses.

Many manufacturers today flatly refuse a single hour's experimentation outside their showrooms. They claim, with some justification, that people are apt to damage or mistreat sample aids, which results in their being sold at a loss to the company, either as reconditioned or second-hand units. Or worse yet, they intimate, an unscrupulous dealer might have them repolished at the factory, and then pass them on to future customers as brand-new.

Then, too, this use-before-you-purchase method is not in vogue for any other type of merchandise. You do not try out a new suit, a pair of shoes, or an automobile in this manner. Instead, you make the purchase outright, knowing that if anything is wrong with the merchandise, a reputable seller will make it right.

Another not so obvious, but probably more important objection to preliminary trials is that a hearing aid constitutes merchandise of a very special character. The new user often requires considerable time to become accustomed to it and to re-establish hearing habits. The period of adjustment may extend over a few months, and the companies are most reluctant to permit tests to drag over such a period. They claim that prospective purchasers can learn little more about an instrument in two weeks than they can during an office demonstration.

Learning to obtain satisfactory results with an aid often calls for guidance; and the manufacturers say they cannot give this guidance if they are uncertain about the client's intentions. The process often requires practice and they maintain they should not be penalized if the new buyer neglects to practice.

Moreover, the firms who refuse trials state that experience has shown that someone who only rents an aid, and who knows he can take it back at any time, is likely to become discouraged at any early difficulty and to exercise at once his privilege of returning the instrument. On the other hand, someone who has made a purchase is more likely to persevere, with ultimate profit to himself. Consequently, several companies claim that trials have stopped many people short of their goal, who might eventually have been helped.

Some of the "conservatives" will permit a tryout, however, to habitual wearers, figuring that they know how to get the most from an instrument, have a basis for evaluating it, and will not be misled by the factors that may confuse a new user.

An executive of one of the no-trial companies offers this comment: "On the matter of trial loans of instruments, you should take into consideration the unredeemable cash outlay required on the manufacturer's part which would be almost impossible to collect in a rental fee.

"Fifty per cent or more of our sales and, by far, the major portion of sales of competitive makes, are in the air-conduction group. On the better aids this involves the making of a specially molded eartip in order to give the final results the user should get. As you can see, this involves direct service and manufacturing expenses that cannot very easily be charged to the prospect if he should decide against buying.

"When you consider this and the fact that any reliable manufacturer must completely recondition and sterilize trial instruments or else sell second-hand ones, the expense becomes unbearable for either the manufacturer or the person deciding to make a trial."

Yet despite all these arguments, a considerable number of firms have a more generous policy. Usually they permit trials on a rental basis of from 10 per cent to 20 per cent of the purchase price. That is, they make a charge for using an instrument for a limited time, after which, if the transaction is consummated, the rental fee is applied to the cost. In some instances, it is possible to arrange for a few days' free test—but this is usually a delusion. Actually, it is true that you cannot attempt to gauge the possibilities of any air-conduction audicle unless you spend $5 to $15 to obtain an individual earpiece, specially made up to fit every curve and wrinkle of your ear. But even though you are forced to this expense, if you can either borrow or rent an instrument before making a final selection, I strongely urge that you do so.

Some potential purchasers—wary and dubious about the entire subject—or eager for a "spare," may play with the idea of buying a second-hand or reconditioned aid. While occasionally a fine reconditioned instrument can be secured, the manufacturers strongly discourage any second-hand dealing. In fact, almost all the used machines they acquire, either by purchase or trade in, are promptly taken off the market. Apart from the important consideration of an exact fitting to the customer's audiometric measurement, the question involves many of the same arguments as in trial before buying. Only more so! The manufacturers maintain that the instrument itself represents merely a small fraction of the selling price. The major part lies in distribution and servicing costs. Yet, obviously, no one wants an aid unless the company is prepared to stand behind it. The makers claim that these intangible factors would put the price of a reconditioned instrument—if properly serviced—almost on a level with that of a new machine.

Whether someone contemplating the purchase of an aid should "shop around" depends largely on whether he has ever used an instrument before. A properly interpreted audiometric test often restricts the potential purchaser to two or three "most likely choices." If he has had fairly long previous experience, he may gain information of some value by trying different makes. But if he has never before used one, it is probably preferable if he confines his investigation to a limited number of models. If he

attempts more, he will merely wear himself out needlessly—since a fitting will take about an hour—and he will find himself hopelessly confused by conflicting claims.

It is impossible for anyone to remember from day to day, or even from hour to hour, how well he heard with a particular machine. So he cannot make an accurate comparison by wandering from office to office. Also, anyone who is hard of hearing is not, at least in the beginning, a good judge of the sound delivered by an instrument. What seems best to him may not be what is best to correct his condition. Having had imperfect ears for a long time, he cannot estimate tones properly. If, for example, his impairment is greatest for high tones, he may want to select an instrument which amplifies low tones and which will thus make him hear more loudly the sounds he has grown accustomed to. Amplification of high tones may sound "unnatural" to him, although this is what he really needs to improve understanding of speech.

Accordingly, the reliability of the maker and seller remain the chief considerations in the selection of a hearing aid. The service which can be counted upon after purchase is specially important, As with automobiles, "it's not the first cost—but the upkeep." Over the years a large number of concerns have entered the hearing aid field—and a large number have gone out of it. People who bought instruments from short-lived manufacturers have found themselves saddled with an "orphan", for which it was difficult if not impossible to get service and parts.

Quality and availability of service are of paramount importance, As a hearing aid wearer becomes used to sounds again, some change in the "tuning" of the instrument may be required. The seller should be conveniently available to check on such needs. Obtaining the most satisfactory results from a hearing aid is something that must be learned. Upon first wearing it, a period of adjustment ranging from a few weeks to a few months can generally be expected. During this time guidance and advice are very helpful.

Although an aid is constructed of a great many fine parts—infinitely more delicate than a small clock—put together with extreme nicety, you subject it to comparatively hard usage. It may be turned on from twelve to sixteen hours a day. You walk about, moving the device up and down with each step; you bend and turn, and collide with others in crowds. You wear it indoors and out, subjecting it to changes in temperature; you carry it close to your body where it may be moistened by perspiration. Thus your hearing aid almost becomes a part of you. Yet few radios, which it resembles in construction, could be expected to stand up under such conditions. It is not surprising that your instrument, although designed to withstand these shocks, gets out of order on occasion. And, as is the way with so many inanimate things, it will seem to have a malicious ability to pick the most inconvenient moments to stop operating. At such times, the accessibility of prompt service is invaluable.

I would go so far as to suggest, that within reasonable limits, your choice of an instrument should be partly influenced by the availability of service. If, for instance, you are a farmer, undecided between two aids, one procurable thirty miles away—the other at the county seat twenty miles further—it probably makes no difference which you select. But if you are a traveling salesman, constantly on the go, try to settle on a make with dealer representation throughout the country.

Then, too, your work and the extent of your hearing loss enters into the question. If you have only a slight loss, and fill a position which does not involve too much conversation, a few days' dependence on your unaided ears is no fatal inconvenience. But if you are a doctor or lawyer, with a large degree of loss, you will feel more crippled than the nearsighted man who has just broken his only pair of glasses. For example, one of the newest companies to enter the field, who are marketing a popular low-priced model, require their customers to return the instrument to the factory for repairs—which means that you are on your own for an indefinite period. Of course, this particular company (and all its competitors) claim that if necessary they will rent you a replacement for a few days. Actually there are never enough rental instruments available to meet the demand.

What this all adds up to—although the companies are still inclined to soft-pedal the point—is that everyone really dependent on his hearing aid should own two. Along with hundreds of others, I have a spare . . . as I cannot afford to take time out in case of unexpected trouble.

The manufacturer of one of the higher-priced machines takes care of service needs by means of a "replacement plan." If anything goes wrong with the instrument within a year (except damage due to dropping or misuse), it can be replaced with another of the same type and tone adjustment, at any of the company's offices throughout the country, without charge. Subsequently—after one year from purchase—the replacement can be made for a sum considerably less than the original purchase price.

But basically service remains the fly in the ointment for most otherwise satisfied wearers of aids—regardless of the models they may own. Certainly, where weighing the services of various aids, you must take the element of service into account. Fortunately, most repairs are of a minor nature—you can usually read a newspaper while your instrument is being doctored. On the whole, service charges are not unreasonable—ranging from 25¢ to $5 and up, if part replacement is required. The difficulty lies in the human equation—particularly now with the manpower shortage, when every type of business is staggering along with inexperienced and overworked help. Naturally, service outside the metropolitan areas is apt to be more sketchy and less skilled; partly because small dealers are seldom equipped with the elaborate paraphernalia essential for diagnosis and major operations!

Initial cost requires consideration in buying anything, and the prices of different makes of hearing

aids vary widely—from under $50 to almost $200. Service is one of the factors in this wide range. So far as construction and quality of materials are concerned, the principal makes appear all more or less alike, and the cost of their manufacture comprises a relatively small fraction of the selling price. Cost of distribution, however, remains higher than for many other products because of the special characteristics of the market. The time which is given to each customer, or which should be given, likewise constitutes a large item of expense to the distributor. Executives of some hearing aid companies say that, just as razors can be sold at a loss if the manufacturer thereby increases sales of his blades, they could virtually give their products away, if they charged a fee for each telephone or office call for advice or minor servicing.

But regardless of how fine an instrument you buy, or how low your repair budget, you must not overlook the fact that wearing a hearing aid entails a constant maintenance cost in batteries.

It appears impossible to make a generalization which will give any average weekly figures on the expense involved. There are so many variable factors: the kind of machine you own and the type of battery required for your particular purposes; the care you give them, the extent of your hearing loss; how many hours a day you use your aid . . . these are only a few of the considerations. For instance, a person with a severe deafness who wears an aid continuously, obviously consumes more current than someone with just a slight deficiency who only wears an instrument to the theatre or movies; then, too, those with only a slight loss can drain a battery until its energy is nearly exhausted, while those with really bad ears may have to throw it away while it still registers quite a bit of juice!

A 4½ volt battery for a carbon machine sells, on an average, for 75¢, and often holds up for a week. An electronic aid uses two batteries, an A cell, generally priced at 10¢, which lasts from 14 to 16 hours,* and a B battery, supposedly good from 500 to 800 hours—with a $1.75 sales tag. However, there may be deviations from these figures on "service-hours"—as high as 100 per cent in either direction.

Actually, no two cases are alike. I put my instrument on at 8:30 A.M. and wear it continuously until 1 A.M. the following morning—over 14 hours at a stretch. The nature of my work—involving an unending stream of phone calls and interviews, makes it essential that I never switch it off. But I have learned all the tricks of conservation. I alternate batteries daily—sometimes twice daily—so as to "rest" them, I keep them in a cool, dry place, I try to nurse them along in every way—and thus I manage to average about $1 per week for running expenses. Someone else might have a job which permitted him to switch off his instrument a good part of the time, and naturally his bills would be lower.

* One of the recent popular-priced models uses a 25¢ A battery, which is said to last for about 70 hours.

One thing I urgently advise. Always keep a supply of "extras" on hand in case of emergency. Otherwise you will have your batteries suddenly go dead, on Sundays or holidays, or immediately before an important business conference, or just as you are rushing for a train and cannot stop to purchase a replacement.

There seems to be quite a discrepancy in battery standards—even those of the same make. No dealer will guarantee them or make refunds. If you buy a new one—and it goes dead in a few hours—it's just too bad. Wartime batteries are particularly poor—to say nothing of intermittent shortages. Users report from 25 per cent to 50 per cent less "life" than in the "good old" days. Your only protection is to follow the directions in your instruction book on battery care and hope for the best.

Every hearing aid wearer should own a battery tester—costing about $2 to $3.50. Because of restrictions and war conditions, you may have great difficulty in purchasing one. To my mind, we need this piece of essential equipment as badly as a commuter requires an accurate watch. Unless we wish to drag our batteries back to the dealer every week or so for a check-up, it is impossible to keep our instrument functioning at par. In fact, those who complain bitterly about the inefficiency of audicles are often the very people who travel about on nearly exhausted or dead batteries. The same type of individual never can understand why his car stops when there is no gas in the tank!

Remember—just as a silver lining to all this talk of upkeep—that the government allows income tax deductions on moneys expended for instruments, repairs, and batteries—as items under medical expense.

An electronic hearing aid consists essentially of four parts: (1) the microphone, which is sensitive to sound-waves; (2) an electric battery, which produces current to augment their energy; (3) vacuum tubes, which are a means of regulating the flow of the added power; and (4) the receiver, which transmits the magnified sound waves to the ears.

Receivers are of two principal types—bone conduction and air conduction. The first is a small oblong unit, held in place by a headband so that it presses lightly against the mastoid prominence—the slight "bump" behind the outer ear. The air-conduction receiver is a small round "button," worn in the opening of the outer ear, and kept in position by an ear-tip, generally made of a transparent plastic material. Since the size and shape of the ear canal varies greatly in different people, the ear-tip should be custom-made to give most satisfactory results. The process consists of taking an impression of the external auditory canal, much as an impression is made for dentures.

In theory, a bone-conduction receiver is usually indicated in cases where, while the nerves of hearing are relatively unimpaired, the loss is due chiefly to damage of the middle ear. An air-conduction receiver, on the other hand, is likely to be used where the hearing difficulty is due chiefly to nerve impairment. But there are many exceptions to this generalization.

In modern aids, the microphone and vacuum tubes are housed in a single case, referred to as the *transmitter*. Ordinarily made of plastic, it appears about the size of a vest-pocket cigar-case. This part of the instrument also contains an on-and-off switch, a volume control, condensers, transformers and other electrical parts, all constructed on a very diminutive scale. Two batteries are required: a low-voltage A battery, to "light" the vacuum tubes so they will operate; and a higher voltage B battery to supply the sound-augmenting energy. The transmitter, batteries and receiver are connected with one another by fine electrical cords.

A hearing aid, then, gives out more sound-energy than it receives—using the B battery as the source of this *extra* energy. Naturally, the sound delivered by the device should not only be louder than the original sound, but should also be, insofar as possible, subject to controls required for greater amplification to tone areas where the user has the greatest hearing loss. But as in a fine radio, the emphasis should be put on the quality and fidelity of reproduction.

A vacuum tube in a hearing aid uses the almost infinitesimal energy of sound-waves in the air to regulate the flow of electrical current so that the patterns of the two conform. Thus, the vacuum tube might be compared to a man having his finger on the trigger of a machine gun. He may use very little energy to flex his finger, but the force with which the bullets strike their target is of course, many times greater. And if the gunner pulls the trigger in a particular rhythm, for example—*pull—pull-pull—pull,* the bullets from the gun will strike with this same stress—*hit—hit-hit—hit.*

This illustration roughly approximates what happens in a vacuum tube hearing aid: sound strikes the microphone and produces a certain vibration pattern in its diaphragm. This sets up an identical grouping of very minute electrical variations which, in turn, are used to impose a similar design upon the relatively strong current drawn from the battery. The powerful electrical variations are conveyed to the receiver. There they are converted into the vibrations of a sound, which is a greatly enlarged counterpart of the one that originally entered the microphone. In addition, there is a planned distortion of the original sound—that is, part of the tones composing it are emphasized in relation to the others in order better to compensate for the characteristics of the users' hearing loss. To summarize: the *small mechanical* energy of the original sound is transformed into *small electrical* energy, which controls a *large electrical* energy, which is finally changed into a *large sound* energy.

The great majority of hearing aids manufactured today are of the vacuum tube variety. However, instruments using particles of carbon in the amplifying system were sold for many years prior to the successful development of electronic aids. Naturally, a substantial number of the carbon sets are still in active use.

The carbon aid is based on the electrical conductivity of carbon, which is extremely sensitive to pressure. Behind its diaphragm are carbon granules or small spheres. When the disc vibrates, in response to sound waves in the air, it exerts varying pressure on the particles. This effects their electrical conductivity, and thereby causes changes in the current drawn from the instrument battery. Thus the extremely small energy of sound waves is used to regulate a flow of electrical energy in such a way that it conforms in pattern to the pattern of sound entering the transmitter. The reconversion of the electrical energy back into sound which is louder than the original is accomplished, as in electronic aids, by means of a bone-conduction or air-conduction receiver.

Carbon sets were brought to a high degree of efficiency. Indeed, the best models had advantages over the earliest electronic devices. For instance, they require only one battery as compared with two—heavier and more expensive—needed to operate the newer types of machines. Then, too, they are somewhat less fragile than vacuum tube instruments—although the latter have been brought to a point where they are very resistant to breakage.

Another point in their favor is that, when in need of repair, their power as a rule diminishes gradually, thereby giving warning of approaching trouble, whereas, if something goes wrong with an electronic aid, the difficulty is apt to result in instantaneous failure to deliver any sound whatever.

On the other hand, the vacuum tube aid is more powerful. The range to which it responds and its distance pick-up are better. The tone quality is clearer and freer from noises arising within the instrument itself. And it operates in all positions, whereas a carbon aid is likely to cut off when the wearer bends over or otherwise brings it into a horizontal plane.

Much greater control of the sound delivered is possible through the use of vacuum tubes and the other parts of an electronic aid; hence more accurate fittings can be made and a better degree of hearing achieved.

10 Wear, Care, Repair—and Beware

No matter what make or model hearing aid you select, you cannot and should not expect it to be a precision instrument in the true sense of the word. Yet hearing aid makers are fond of likening their products to eyeglasses. There is, of course, a certain parallel. Both devices compensate for the weakening of sense organs. Both have had to gain acceptance in the face of an emotional aversion against them. When, however, the comparison is carried beyond these points, it becomes misleading. For example, although the adjustment of an

instrument to a particular case is important and must be made with thought and care, it is probably much less exact than the fitting of eyeglasses. Electro-acoustics is by no means so precise a science as optics; the modifications imposed upon sound-waves by a hearing aid cannot be so closely controlled as the modifications imposed upon light-waves by a lens. Certainly the functioning of the eye is better understood than that of the ear, the most important part of whose mechanism can be directly observed only after its owner is dead.

Therefore, when manufacturers advertise the hundreds of combinations possible in their instruments, the statement is mathematically true, but it is not wholly accurate in its implications. Although the companies deny this, many suspect that a half-dozen or so of the combinations will take care of nearly all cases of aural impairment for which mechanical help is practical. In other words, several of the "hundreds" of combinations would be equally suited to any particular hearing loss.

A further difference between a hearing aid and eyeglasses is that the former is considerably more inconvenient, bulky, and cumbersome to wear, since it consists of three separate elements which must be distributed about the person. And because of its extreme complexity, it involves repair expenses not necessary for eyeglasses. Not only is its original cost far higher, but it entails a constant operating cost in batteries.

Yet the person who buys a hearing aid, even though he has acted after considerable initial reluctance, sometimes has extravagant expectations of its performance. Having convinced himself that an instrument represents the tool for solving the problems of his bad hearing, he anticipates that simply by putting it on and flipping the switch he will hear as well as he did when his ears were undamaged. His extreme hope usually finds expression in an immediate visit to a sound movie, play or lecture.

At any of those places the new convert will almost certainly be disappointed. And since his disappointment will probably be as extreme as was his hope, he will promptly conclude that the instrument has failed him. He forgets, of course, that he has chosen to test it under circumstances which put a strain upon the acuity of anyone with good ears. He forgets, too, that the instrument is after all only a tool, and as such requires the user to manifest some effort of his own.

At the risk of throwing cold water on your enthusiasm, let me utter a word of warning. Regardless of what model you choose, an instrument in some respects is like a baby . . . once you have it, your troubles begin. Certainly it is unreasonable to simply put it on—like a gift necktie—and walk away. It is much more likely that you will have to become used to your new acquisition, somewhat as you grew accustomed to bifocals or bridgework. Indeed, the instrument may feel so strange that just its physical pressure can distract you from its benefits.

Air Conduction Receiver

Bone Conduction Receiver

It is not easy to adapt yourself overnight to the wearing of any device. Even today, after years of experience, I occasionally feel like a horse in a harness. In winter the wires get caught in your overcoat . . . in summer they constrict your freedom of motion. Everyone must work out for himself, by the trial and error method, how and where to carry his aid. Partly it depends on the size and contour of the individual—and his intangible personal preferences. I wear mine clipped to the pocket or lapel of my coat, as the rustling noise, made by clothes rubbing against the transmitter, annoys me and seems to dull the reception.

In a bone-conduction machine, the slight pressure of the headband may be annoying. If it is the air-conduction type, the eartip may seem uncomfortable. In either case, some alteration will probably be necessary. It is the duty of a competent dealer to keep in touch with a client during the "breaking in period" immediately after purchase to see that such necessary adjustments are made promptly.

The first time you confront a hearing aid on a "personal basis"—that is, with the knowledge that here is something which you ought to make almost a part of yourself, your reaction may be, "How can I carry around such a contraption? I'll never be able to wear it comfortably and without bulging in all the wrong places."

At the time you say this to yourself you may have in your pockets, if you are a man, a wallet three inches wide, four inches long and half an inch thick. In addition, quite possibly you are burdened with a key case weighing as much as a quarter of a pound, a pocket notebook, a pen and pencil. You often have a pipe and tobacco pouch stowed in your clothes. If you are a woman, you may be lugging a pocketbook twelve or more inches long, several inches wide and weighing between two and three pounds. You carry vanity case, lipstick, mirror, comb, cards, a fountain pen, cigarettes, keys and a change purse. You probably wear girdle and brassiere—which are much larger and bulkier garments than the ribbons used in supporting a hearing aid.

The businessman does not feel sorry for himself because he must cart around a well-stuffed briefcase. No one considers it remarkable that a policeman is weighed down with a heavy gun, a nightstick and handcuffs, that a linesman must use climbing irons, and a construction worker a helmet and heavy steel-toed protective shoes. All are implements of various trades, the tools different people need to fill their roles in life. A hearing aid is the tool you and I need for the same purpose.

Wearing it gradually becomes an entirely natural thing to do. We slip the instrument on and off with as little thought as we give to putting on an article of clothing. And I assure you that an aid can be worn without marring one's appearance.

Many men deposit the transmitter in an upper vest

pocket and the batteries in the hip pocket. Others prefer to place the transmitter in a holder strapped underneath the shirt or to wear it on a ribbon about the neck like a "dog-tag." Still others attach a shoulder-holster arrangement under the shirt with pouches for both transmitter and batteries. A leather holster for batteries can also be slung from the belt.

Hearing aid companies suggest that women may wear the transmitter in the hollow of the bosom clipped to the top of the brassiere. Or it can be suspended in a pocket sewed to the brassiere or foundation garment below the bustline, or in a pocket sewed to a shoulder strap. Volume controls of instruments are designed so they can be manipulated through the outer clothing. Batteries are transported in a pocket made in the foundation garment at the curve of the waist or hung from a shoulder strap. Or they can be carried in a small pocket fastened to the bottom edge of the girdle and secured by a ribbon against the inside or outside of the thigh.

Some of my style advisers, reading the above directions, gave me to understand that many of the well-dressed women of today do not wear a brassiere or a foundation garment, but content themselves with a garter belt. So what can a mere man say, but "whatever you wear, you can fasten the instrument to your unmentionables." At any rate, I leave the solution of this question to the ingenious sex.

But women, as a rule, because of their dress, have an easier time concealing the device than we men. The wire to the receiver is often hidden in a string of beads; the receiver itself can be covered by the hair-do; and those who dislike distributing the parts under their clothes can carry the whole works in a specially designed combination instrument case and handbag.

Both men and women unaccustomed to an aid, regardless of their particular methods of wearing it, are constantly worried lest they "do something" to get it out of order. Yet the rules on caring for an instrument are quite simple. The first is the obvious one of protecting it from breakage. Handle it tenderly, as you would a good watch—and avoid dropping it! Heat is injurious to an aid . . . it should never be left near a radiator or stove, in a closed automobile in hot weather, or in strong sunlight. In stormy weather, it should be kept dry. The switch should be turned off when the instrument is not in use, to conserve batteries, and the A battery should be disconnected at night.

As in any electrical equipment, a chief cause of failure lies in careless handling of the cords. Hearing aid cords are generally well made. They will give good service if worn loosely, so as to allow a little slack, if kept free from kinking, and if not misused in pulling out the contact plugs. (Take hold of the plug itself instead.) Of course these few suggestions are merely highlights. You will get a detailed instruction book with your machine. Study it carefully and follow the directions!

Once you start to use your aid, you may have difficulty in "sorting out" the sounds you want to hear from those you would like to escape. The world is normally full of hubbub. A person who has never experienced the enforced silence of loss of hearing has the ability to select certain parts of the medley and focus attention on them. He uses his faculty unconsciously and automatically. He can concentrate so completely on what he wants to hear that he is unaware of all other noises unless they are exceptionally loud or strange. If he is intent upon a conversation, for example, he is oblivious to the music from a radio at the other end of the room, to the hiss and snap of an open fire, to an auto horn in the street.

If this faculty of concentration is not used, it may diminish. Then when sounds are brought to you by a hearing aid, which magnifies background sound as well as the particular details to which you wish to listen, you are confused by the great number of auditory impressions forcing themselves upon your consciousness.

The background noises—footsteps, coughs, the sound of people's movements—intrude upon and interrupt the conversation you are attempting to follow. The world may seem in such a constant turmoil of bangs, clangs, pops and screeches that it makes you nervous and tired. At first, you may feel that silence is almost preferable to the distracting racket. However, by taking time, by accustoming yourself gradually to the din and being careful not to overtire yourself, you will develop again the power to listen selectively and to disregard background clamor.

Accustomed as I am to wearing an aid, extraneous sounds and background noises still puzzle and bother me. Sometimes, walking along the street, I hear a constant hissing which leads me to conclude that the machine is out of order. Just as I am wondering when it will be convenient to go for repairs, it dawns on me that the hiss is produced by the suction of worn tires on smooth asphalt. On other occasions, I have been startled by "a frying pan noise," and mentally cursed the physical frailities of my device, only to discover that someone in the room was tearing up paper!

Probably you did not become hard-of-hearing in a single instant; and regaining hearing skill will likewise take time. If you had carried your arm in a sling for a long while so that the muscles had grown flabby through lack of exercise, you would not expect to use the arm for a fast game of tennis as soon as the sling was discarded. A gradual rebuilding of muscle tone and re-establishment of skill would be required. Similarly, re-establishment of ability to make effective use of sound is nearly always necessary.

Another possible source of confusion when starting to use a hearing aid arises from the difference between *hearing* and *understanding*. To appreciate this, we must realize that language, both written and spoken, is a *system of symbols* for ideas. With written language, we learn to associate certain mental pictures with conventional signs that are written or printed—that is, we learn to read. With spoken language, the symbols are sounds.

We have already mentioned that if this association with concepts is not regularly used, it may be partially lost. In other words, the faculty of sound memory must

be reawakened and stimulated. It is a fact that someone who does not use his hearing may largely forget the spoken language even while continuing to use the same words in writing. How this happens can be clearly illustrated when considered in terms of a foreign language. Perhaps at one time, you studied French and were quite proficient at understanding it both as written and spoken. But if you have not heard it spoken for many years, you have probably grown "rusty," even though you may have continued to read French novels or newspapers. If today you were to find yourself in the midst of a French-speaking group, you would not be able to understand. Here and there you might catch a familiar word, but by and large you would discover that the talk was too rapid to follow. Before you had remembered the meaning of one word, half a dozen more would be rattled off, leaving you floundering far back in the conversational stream.

Something of this same process operates when one has not heard his mother-tongue for a considerable period—or has heard it imperfectly. His skill in associating meaning with sound deteriorates. When he starts to listen again with an instrument, it seems that everyone talks at a breathtaking pace. Now and then a word is caught, but not the meaning of whole sentences.

Especially is there difficulty in following conversation among a group. The topic of the talk flies like a shuttlecock from person to person, bewildering the unskilled listener. He has trouble in quickly discovering which of the group has made a particular remark. Here again, though, with patience and practice, the power to understand phrases and to follow group discussion is regained. You become able to interpret the meaning of sounds without conscious effort; you learn to identify differences in voices and so to distinguish among several speakers even when they talk in rapid succession.

The conscientious seller of hearing devices will point out the possibility of these early problems and will give you constructive advice on solving them.

The time necessary to build hearing habits anew will depend on several things, including the degree of loss and how long it has existed. In general, however, the wisest course is to keep to a regular schedule of practice. At first, use the instrument for relatively short times each day, lengthening the periods but never prolonging them to the point of nervousness or fatigue. During this initial period, hold conversations only with one person at a time in reasonably quiet surroundings. If speech at normal speed seems too fast, have someone read to you slowly. The speaker or reader should use a normal tone, not speaking loudly but letting the hearing aid do the work. A series of hearing exercises is given in the section on re-educating your hearing.

Listening to music on the radio is good practice, but you must not immediately expect to understand speech over the radio, since it is likely to be more or less distorted.

When hearing under the above conditions becomes easier, try group conversations—small groups of two or three people, not crowds. Practice carrying on a discussion with one other person at a greater distance than when you first secured your instrument. At all times, remain relaxed, letting the sound come to you rather than straining out to reach it. Strain will fatigue you, and fatigue will lower your hearing.

After you have followed this procedure a while, listen to news commentators and single speakers on the radio. Still later, try yourself out in church, theaters and movies. Some wearers of instruments are never able to use an aid satisfactorily in such places. If you are one of them, remember that eighty per cent or more of the occasions that demand hearing do not require understanding from so great a distance as in an auditorium.

Of all spacious buildings, a church is likely to be the best place to follow conversation at a distance, because there is only one speaker. Of course, the acoustic qualities of churches vary, and there are many in which people with normal hearing have difficulty understanding. Next most favorable for the partially deafened is a theater. A movie is likely to be the most difficult, owing to distortions caused by the sound-reproduction system. Hearing in any public gathering will naturally be affected by where you sit. Try to take a seat a few rows from the front, toward the center, and not under a balcony. Quite a few churches and theaters are now equipped with electrical aids, and since these are adjusted to their particular installation, you need not hesitate to take advantage of their presence.

Having discussed at length the advantages of a hearing aid and described the many things it can do for you —it seems only fair to present the other side of the picture and list some of the things it will not do.

It will probably not eliminate head noises. These sensations of sound, arising within the body, can be extremely nerve-racking. Exasperating and persistent, they force themselves upon the attention, interrupt work and pleasure, and make even sleep difficult. They are a manifestation of some abnormality within the aural mechanism, of some excitation of the hearing nerves other than the normal stimulation caused by sound waves. In certain cases they may come from hearing, by bone conduction, the flow of blood moving in the vessels in the ears or the sounds of other movements inside the body. A person with completely healthy ears is occasionally conscious of such sensations in a soundproofed room where he can hear no outer noise. Under these circumstances, the use of an audicle, by focusing attention on external vibrations, may push the head noises out of the conscious mind. Head noises arising from other causes may also be masked by the sounds heard with a machine. But there is no certainty of this. If you are bothered with head noises, your doctor should be consulted and may be able to help you control them.

An instrument will not improve your unaided hearing. Although there are instances in which it appears to improve a person's natural perception, it is probable that only his attention to sounds and his capacity to understand them has been quickened. Relief from strain may be another factor in the apparent increased

hearing ability. However, all tests seem to indicate that such improvement is mental; it results from reawakened skill rather than physical betterment.

Conversely, an instrument will not harm your natural hearing nor make you dependent on the device. Sometimes a person using an aid fears, when he lays it aside, that his hearing is worse than before. This anxiety is unwarranted and largely psychological. The blanket of silence when the instrument is turned off seems heavier because the sounds that have been heard previously provide a basis of sharp comparison. The effect is similar to that experienced when entering a movie theater out of dazzling sunlight. Although there is sufficient light inside to find your way, the contrast with the outer brightness blinds you for a few moments.

Dr. Walter Wells, writing in *Hygeia,* said: "I have encountered objections to use of hearing aids on the grounds that they are like crutches on which the user must always depend . . . The comparison is not an apt one. A crutch is something which provides a substitute for normal exercise. A hearing aid is exactly the contrary; it provides normal exercise where it otherwise does not exist."

Wells's point of view is confirmed by Dr. Gordon Berry, in *The Laryngoscope:* "At this point we may refer to the tradition that a hearing aid may injure the hearing. I think this idea results from the fact that once a user accepts a hearing aid, he discovers how much he has been missing and is no longer satisfied with his unaided ear. To himself he seems deafer than he used to be. In point of fact, the use of a hearing aid tends to increase rather than decrease acoustic intelligence. Disuse of any function encourages its atrophy. Using our ears probably does not improve our threshold performance, but it does make our acoustic perception keener."

Certainly it is improbable that any instrument will give you perception as good as natural hearing. The sounds it will bring you, though they will do much to alleviate the effects of an aural impairment, will not be equivalent to sounds heard without the medium of an electrical device. Under all conditions, an instrument is just what it is called—an *aid!* No machine can meet the hearing needs of everyday living so well as the undamaged apparatus provided by nature.

Human life is never perfect. Dreams always outpace reality; aspiration always exceeds capacity. This is one of the eternal truths concerning man and his place in creation. It provides both motivation and scope for growth.

We are constantly spurred by needs, dissatisfactions, problems, obstacles.

Our reaction to obstacles, the solutions we choose to problems, the adequacy of our adjustments to dissatisfactions and the appropriateness of our acts to meet needs—these measure the success of our living.

The sharper the spur, the higher is likely to be the leap of achievement. Examples are legion in which some seeming handicap provided driving force in an individual and directed it into highly productive channels. Children who through disease or accident were thought fated to be cripples have become outstanding athletes. The girl who suffered because she was plain became a great actress. The boy who was always beaten in games by stronger companions won fame as a poet. He who knew the sting of poverty grew rich. He who was the butt of ridicule became a leader.

Hearing impairment, too, has undoubtedly served as stimulation to extraordinary effort. Certainly it has not marred the careers of many who were already successful when hearing faded. Wearing instruments for weakened ears today are well-known novelists, leading lawyers and judges, prominent physicians, distinguished scientists, a great many successful businessmen.

Providence endows us so bountifully that our store of gifts can still be abundant even though much is taken from us. With strength of spirit and the aids of science we can compensate for handicaps.

In the poem *Ulysses,* Tennyson described the Greek hero as tiring of an unproductive life after the great exploits of the Trojan War. In his later years, he bade his former companions sail with him toward new adventure with these words:

"Come, my friends,
'Tis not too late to seek a newer world.
Push off, and sitting well in order smite
The sounding furrows; for my purpose holds
To sail beyond the sunset, and the paths
Of all the western stars, until I die . . .
Tho' much is taken, much abides; and tho'
We are not now that strength which in old days
Moved earth and heaven; that which we are, we are
One equal temple of heroic hearts,
Made weak by time and fate, but strong in will
To strive, to seek, to find, and not to yield."

11 The Junior League

Most recent estimates indicate that there are between two and three million American children of school age who suffer from defective hearing (10 per cent of whom have impairments severe enough to require some *special* training and education). Worse yet, most of the approximately 17,000,000 adult hard-of-hearing derive from neglected *childhood* conditions. Indeed, the early years of life form the crux to any program for the hard-of-hearing population. Childhood is the best time for actual *prevention* of hearing difficulties. Thus, if any loss already exists, this is the period in which prompt *detection* can cure or permanently arrest the condition, thereby making possible the maximum *conservation* of whatever remains.

Prevention of hearing loss in children is largely a medical problem. Except for a small number who are

born deaf, the majority are equipped by nature with normal ears and good potentialities of keeping them so. Actually, events after birth are responsible for almost all ear trouble and consequent impairment. According to some well-known authorities, these are, in order of their importance and frequency: the common cold; infections of the nose and throat as a result of diseased adenoids, tonsils and sinuses; abscessed ears; mastoid infections; scarlet fever; measles, meningitis.

Such conditions are insidious. They often leave aftermaths which may affect the auditory apparatus, even though there seems to have been complete recovery. Consequently, after any of these common disorders, the child should be examined by an otologist as a precautionary measure. And once he is on his feet again, Dr. Josephine Kenyon suggests simple and sensible rules to keep him there:

1. Maintain the child's health and resistance at the highest standard. This means a diet of good, nourishing food amplified with cod-liver oil or vitamins; long hours of outdoor play; plenty of sleep; a school program which does not push him beyond his powers.
2. Upon the advice of your doctor, immunize him against diphtheria and any other disease; vaccinate him against smallpox; avoid crowds and contact with anyone who has a cold, cough or illness.
3. Dress him so that he is comfortably warm.
4. Hold room temperature at 68° F. during the day and about 50° F. at night. Prevent cold drafts from blowing directly on him, especially when asleep.
5. Put nothing directly into the ear canals when cleaning his ears.
6. Teach him to blow his nose gently, with head bent forward and both nostrils kept open.
7. Take good care of his nose and throat—obstructive adenoids and infected tonsils are a constant source of danger. Have him avoid swimming under water and sudden exposure to cold air.

Medical authorities testify that 90 per cent of all hearing loss can be checked or completely restored if detected early enough. Yet parents, through false pride, shame or ignorance, refuse to heed the danger signals—to admit their children's inability to hear. Both father and mother indulge in wishful thinking: "He hears what he *wants* to hear," is a frequent comment. Or perhaps the story runs, "Johnny doesn't pay attention, that's all. There's nothing wrong with his ears. He just keeps his nose buried in a book." Or, "Mary never pays attention when she's asked to help with the dishes, but just mention movies—and she's there with her hat and coat on." Unconsciously or deliberately, these fathers and mothers are using the alibis of absent-mindedness or absorption, rather than admit the truth.

Other intimations of partial deafness in children may be their failure to answer when questioned; misunderstanding of commands and frequent mistakes in carrying out simple instructions; constant use of "What?", "Who?", "I didn't hear," "What did you say?"; mispronunciation of common words; a weary, exhausted expression early in the day; the facial appearance of stupidity; conspicuous retardation in school progress; avoidance of other children; breathing through the mouth, ear discharge, and complaints of noise or ringing in the ears.

Early recognition of poor hearing is, at best, difficult—especially in the very young who have not yet learned to speak. If, however, a child has not acquired a serviceable vocabulary by the age of three, this in itself may well signify some aural deficiency. A year-old baby, though unable to understand speech, should show reaction to such commands as "Clap your hands!" or "Come to mother!" plainly whispered at a distance of twenty feet. A severe hearing loss is indicated in an even younger infant if he does not blink his eyes or twitch his facial muscles—sometimes to the accompaniment of a lusty wail!—in response to a sudden loud noise.

Occasionally in an older child there is a delay in detecting the trouble, because he hears *some* of the time—if not on all occasions. Actually, people fail to realize that hearing varies with the presence or absence of colds or other infections; with the pitch of the speaker's voice and the direction of the sound; with the acoustics of the room and atmospheric conditions. This is true of normal ears; all the more so with deficient ones.

But more often than not, the mother's and father's refusal to accept the "facts" prevents the disability from receiving prompt recognition, diagnosis, and attention. Confronted with the problem of a hard-of-hearing youngster, they flounder in a sea of confusion and emotional stress. No parent can view with total equanimity the realization that his offspring is anything but perfect! Anxiety, fear and even a sense of guilt drive a parent to take "Junior" from one consultant to another in a vain effort to find a Pollyanna reassurance.

Fortunately, however, once parents learn, from a thorough medical examination, that the child's difficulties are as physical—and hence as "faceable"—a fact as his wearing size 6 shoes, they lose much of their confusion and embarrassment. Given a knowledge of how much of a hearing loss exists and what can be done medically to correct it—the average parent should be ready to accept his own share of the responsibility for his child's successful adjustment.

During this difficult period, fathers and mothers must always be on guard against erring in several all-too-human directions. Perhaps more than at any other time, there is danger—as the eminent otologist, Dr. Edmund Prince Fowler, aptly puts it: "The problem will be not the deaf child but the *dumb* parent." There is a constant temptation to let the kindness and sympathy of mother love grow into "smother" love—that pampering and over-indulgence guaranteed to produce a maladjusted spoiled brat. The nagger, on the other hand, treats the youngster as a cripple and a misfit, allowing an almost sadistic affection to unfit him psychologically for life and the demands of normal society. And a third type, the indifferent parent, unwittingly turns the child into a young tyrant, who makes trouble in order to secure attention, or into an idle dreamer, whose fancy brings him escape from a world that does not seem to care.

There are endless ways in which a parent's psychological quirks may warp a child's personality. Irreparable harm, for instance, was done in the case of

young Tommy. The son of a fashionable doctor, he was terrorized by his mother, who forbade him to wear his hearing aid when in or near his father's office, because "it didn't look well . . . it might be embarrassing."

Another well-to-do and presumably intelligent mother would not allow little Jean to skip rope or participate in other "rough" games with her playmates for fear of damaging her hearing aid. It never occurred to the woman that a possible saving of a hundred dollars over a period of several years might wreck her daughter's chance for a normal, active life. In fact, the mother's attitude only intensified the girl's natural tendency to limit herself to a circle of friends sharing the same defect. This inclination, borne out by the testimony of a number of other deafened children, is one that should be strongly discouraged by well-intentioned relatives and friends.

On the other hand, a milkman, who had noticed my hearing aid, recently appealed to me in behalf of his girl. He was determined to give her every advantage. He wanted to know about hearing aids and special schools, lip reading and speech correction, medical and psychological treatment. In the meantime, he was treating her exactly like his other children, and was sending her to an inexpensive dancing class in order that she might cultivate a sense of balance and rhythm and make a proper social adjustment.

Certainly, over-emotional parental reactions are sure to deter—and sometimes to prevent—the hard-of-hearing child from making proper adjustment. I would go further and say that such attitudes make the loss a true *handicap* in every sense of the term! Whatever you do, treat your child as *normal;* refuse to minimize his capacity by over-protection; do not underestimate what he can do with his remaining ability. In other words, do not sell him short.

A deafened youngster is not different. Save for his defective ears he is just like others of his age; he lives and learns according to his individual personality and talents. With normal treatment, he should present no more than the usual problems. Guide him by consistent love and understanding; offer him full opportunity to develop self-reliance and a spirit of independence; give him the benefits of lip reading, speech correction and a hearing aid . . . and he will reach adolescence and adulthood with a normally healthy, well-adjusted outlook—the best assurance of a happy and abundant life.

I cannot overemphasize the importance of laying the proper psychological "groundwork" at home. It will prevent such emotional disturbances as excessive shyness and feelings of inadequacy, or the stubborn defiance of the "problem" boy or girl; it will go far in removing any possible resentment, anxiety or fear of humiliation connected with wearing an instrument. And above all, it will pave the way for a child's cooperative acceptance of the special training and education he will have to receive.

The choice of a school suitable to his needs will be determined, first by the degree of loss shown in his hearing tests, and secondly, by the specific provisions of the educational program set up in his own community.

Until a few years ago, nothing was done for the acoustically handicapped child, unless his deficiency was so severe that it warranted his being placed in an institution for the deaf. The thousands of boys and girls with only slightly dull ears were entirely overlooked—and usually unrecognized. However, through the persistent efforts of the American Society for the Hard of Hearing, the use of audiometers and other tests was inaugurated in many of our schools, thus enabling prompt detection and proper educational treatment for every degree of lessened perception.

Examinations are now carried on in public schools under the auspices of the Board of Education, or in Hearing Aid Clinics at hospitals specified by the League for the Hard of Hearing. Information as to where examinations are held in your community is available through local chapters of the League. No parent need feel hesitant about seeking advice and guidance from this organization. In fact, the *only* way to obtain accurate information on various facilities and training programs is to contact the League or the Volta Bureau in Washington, D. C.

Testing all the pupils in any given locality has generally shown that approximately from 5 to 12 per cent have defective hearing. The majority of these youngsters can carry on successfully in a public school, if they are prepared with a working knowledge of lip reading. Actually, 1½ per cent of the *entire* school population have a hearing loss severe enough to demand lip reading lessons and speech correction. Indeed, one of the White House Conference Reports conservatively estimates that at least 300,000 children are in serious need of such courses.

Some nine years ago, for instance, New York City set up a WPA project to test the hearing of its children. Of the 700,000 examined, 3.2 per cent of the elementary pupils and 1.8 per cent of the high school students showed impairment in both ears; almost 4 per cent of the two groups had defective right ears; about 3 per cent revealed losses in their left ears.

These statistics forcibly pointed to the urgent need for lip reading instruction. And yet actually only 7,000 —a ratio of 1 to 100—were given this help. A few of the others were moved into the very limited number of front seats available. It is a tragic and ironic commentary that in a city as wealthy and progressive as New York only the most desperate cases received attention.

In general, children with subnormal hearing are classified in one of four groups, based on average loss and special educational requirements:

I. The *very slightly hard of hearing:* those with average hearing losses of 20 decibels or less in the better ear.
II. The *slightly hard of hearing:* those with losses up to 40 decibels in the better ear.
III. The *severely hard of hearing:* those with losses up to 60 decibels (more than 50%) in the better ear.
IV. The *deaf:* those with losses of over 60 decibels in the better ear.

In 1941, a special committee studying the acoustically handicapped in New York City analyzed the prevalence of hearing loss among school children according to this grouping. The committee recommended that any "comprehensive program should aim to keep the child . . . as close to the regular program for the normally hearing as is possible without endangering his educational, social and emotional growth."

Today, however, all those who deal with hard-of-hearing youngsters agree that an adequate special program should include an educational "differential" to meet the individual loss in any given case. The program follows a series of steps which do not remove a child from the normal school procedure until the severity of his auditory defect indicates that it is necessary:

1. A favorable (front-center) seat in his regular class.
2. A favorable seat in his regular class, and lip reading instruction.
3. A favorable seat in his regular class, lip reading instruction, and speech correction as needed.
4. A favorable seat in his regular class, lip reading, a hearing aid, speech correction and special tutorial service.
5. Partial attendance in his regular class for certain subjects and partial attendance in a special class for the hard of hearing, given in his regular school.
6. Full attendance in this special class in his regular school.
7. Full attendance at a special day school (For example, P.S. 47 in New York City).
8. Full attendance at a special co-educational residential school (for example, the Lexington School for the Deaf in New York City, which provides residence and instruction from nursery through junior high school, including vocational training).

Almost every case in the group which we have referred to as *very slightly hard of hearing* will require nothing beyond program *1* listed above; the *slightly hard-of-hearing* child of Group II will probably need program *2* and possibly *3*; for Group III, program *4* should be available, as well as the provisions of *5* wherever necessary; programs *6, 7* and *8* are generally indicated for Group IV, though there will be some in this division who may succeed under one of the previous programs, given the most favorable circumstances.

Naturally, no static formula, no broad generalization such as the above scheme, can be expected to serve as a sound basis for the final choice of a school. Many other factors must be considered, including a complete case study of the child in question. This record should include data compiled from physician-parent-teacher consultations; a diagnosis of the type of auditory disability, and when it first occurred; a prognosis of its course and possible results, especially whether it involves a progressive loss of hearing; the child's native intelligence; his psychological make-up; the degree of his success or failure under an approximately normal school program.

The family's social and economic background, moreover, should play an important part in the ultimate selection. The child whose parents are not educationally equipped to give him considerable help in his home work, or one whose economic status indicates vocational training for job placement at an early age, will probably need the added facilities of a special day or residential school, even though his impairment does not classify him among the severely hard-of-hearing or the deaf.

In the last analysis, you will have to take the best that you can get. Fundamentally, the question comes down to this: what type of special program is available in your community, and where is it given? For with the exception of state and partly subsidized private residential institutions, few communities have enough properly equipped schools to satisfy the needs of all. If the case study on your child happens to show that he requires a special regime, and it is given only at a considerable distance from your home, or there is nothing approaching such training in your vicinity, it will probably be necessary for him to attend a residential school.*

Because of the constantly growing need for better cultural and vocational opportunities for hard-of-hearing children, almost 200 cities have established a working plan. It includes annual hearing tests for *every* child; provisions for medical care, if needed; lip reading and speech correction, "as required"; special "conservation of hearing" classes for the severely handicapped and those totally deafened after they had already learned speech. Wherever this project has been given a genuine trial, it has succeeded beyond all expectation. Many other cities and rural communities are edging in gradually, but the idea suffers from the meagerness of funds appropriated for it.

All parents—and especially those whose children have defective hearing—should make themselves familiar with conditions existing in their own communities for the education of the deafened. They should realize that any budget spent on the prevention, early detection, and treatment of impairments will mean a sizable decrease in the amount otherwise expended on the care of backward, delinquent, or abnormal children. Economy is all right—in its place. Postwar budgets must be cut to the bone—but not at the expense of children. The situation challenges every public-spirited parent and teacher to insist that the schools in his home town give sufficient attention —and appropriations—to the needs of pupils with defective hearing. For what better use for money than to rekindle hope—and courage—in dull-eared youngsters, or to turn clods into socially and economically independent citizens!

* An excellent article in *Collier's*, July 14, 1945—"New Hope For The Deafened Child," by Eva Yates—describes the curriculum of the John Tracy Clinic of the University of Southern California in Los Angeles. Inquiries about this program and the correspondence courses available may be made directly to the University.

12 Job Wanted—and Found

WHETHER our ears are numb or nimble, we soon learn that "life is activity, inertia is death." For all of us life literally "moves on." Regardless of economic pressure—regardless of family needs and personal aims—we need the stimulus of work. But a job is more than mere "gainful employment." And to find one that feeds both body and soul—that makes for happiness and inner harmony—is a life-work for each and every human being.

Indeed, living means *giving*—giving freely of the best of ourselves and our energies to something that takes us beyond the confines of our own small personal universes. Financial fortunates who do not have to serve as family bread-winners may derive happiness from devoting their efforts to a worthwhile hobby or avocation, to some phase of voluntary service or welfare activity. But for most of us who must earn our living by the sweat-of-the-brow method, soul-satisfaction comes from accomplishment—from performing a service that absorbs and exercises every iota of our individual talent or skill.

Here, at least, we all start out "equal"; we face the same problem regardless of differences in hearing. Each of us, however, is endowed by our Creator with certain inalienable rights—and abilities. Each of us has at least *one* activity in which he excels; and some can perform a given task much better than others.

Philosophers tell us that no one can be truly happy in life or work until he discovers what he can do best and enjoys doing most (whether it be baking a cake or writing a sonnet); until he has developed this talent by proper training, and has put it to practical use in a suitable kind of employment.

Before exploring the subject, I had the preconceived idea that the vocational prospects of the deafened were rather dismal. The best that I could honestly say, I feared, would be a mumble-jumble about the highly restricted choice of opportunities. I had envisioned a rigid classification, based on varying degrees of hearing—such as 179 different kinds of work —top-layer positions—for those with 20 decibel loss, 586 not so good openings for those with 35 decibel loss—and so on.

But in checking up on what is being done vocationally, I was delighted to find that I had been completely mistaken. As soon as I had talked with employment counselors, personnel managers, psychologists and other vocational experts, I realized that—within reason —there are no limits to the career possibilities open to the deaf. Certainly those in the know register emphatically on our side.

Dr. William E. Grove, for example, says: "There is no kind of work that the hard-of-hearing cannot do and do well if he approximates his psychological attitude to the normal, if he compensates for his defect with lip reading and a hearing aid, if he makes himself just a little more efficient than his fellows . . . Industry will not employ him because of his defect but in spite of it."

Dr. Emily T. Burr, director of the Psychological and Vocational Service, goes even further: "The acoustically handicapped are the easiest group to place." And representatives of the Vocational Advisory Service, on the basis of more than a quarter of a century of placement work in all walks of life, claim: "While impaired hearing is in some cases a limiting factor in the selection of training and employment, it alone almost never eliminates the possibility of useful work in competitive industry. A wide variety of fields are open to the deaf as well as to those who hear perfectly . . . Bookkeeping, accounting, research, writing, arts and crafts, skilled and unskilled factory work—even public contact jobs are perfectly feasible for those who find no difficulty in conversing with others. Though the impairment is an important factor, it is still only *one* of many other considerations which must be taken into account in planning a vocational future intelligently."

So accepting the experts' favorable estimate of our employability, the essential question no longer remains "Is there any job open for me?" but rather "How can I go about getting a position—and a good one at that?"

The most practical answer—regardless of whether you have a slowly progressive type of deafness or a suddenly acquired variety—is to use exactly the same methods of job-hunting you would if you were *not* deaf. In other words, follow the *normal* procedure: watch the *Help Wanted* columns, write letters for interviews, make telephone calls, ring doorbells, ask your friends if they know of any openings, utilize every single contact that might be instrumental in turning up a vacancy that you can fill. That is the way most people set about looking for work—and in the large majority of cases it is also the way most people actually *find* employment.

If you have been holding down a position and if your impairment has been gradual (as is usually the case), it is to be hoped that you have taken steps to help out the "blind spots" in your ears. If you have failed to do so, there is not a moment to be lost. With lip reading, a hearing aid, and the proper mental outlook on your condition, the chances are in nine cases out of ten—that you can remain where you are or in a closely allied field.

Even if your eventual loss is so severe that you can no longer carry on the requirements of your position, there is no reason why you should not be satisfactorily shifted at your present place of employment. Go to the manager or personnel officer and resell yourself. One of my friends, for example, a middle-aged man who for years had headed a large company's accounting department, found conversation constantly becoming more difficult and hence could no longer direct his office helpers efficiently. The vice-president suggested he shift to accounting, which would not require supervisory contact with other employees; now, still with the same corporation, my friend's success

and happiness seem assured.

Suppose, however, you are a returning serviceman who has suffered a hearing loss in combat; or a war worker deafened by factory noise or as a result of accident or injury. What are the odds on your finding employment? I assume that you already have a hearing aid and have begun your study of speech reading and other adjuncts. You face an uphill fight—for there is no doubt that a sudden plunge into the silence calls for more ingenuity and fortitude than if you had been given years to prepare yourself. Such a condition will always require a greater degree of readjustment—a more drastic reorientation of your life. But, even with this tough break, at first you should follow the same procedure in seeking employment as any normally hearing person. The only difference is—obviously you must *admit* your deficiency.

Fortunately, today we have an excellent opportunity to find out just what type of work we are best fitted for by going to a vocational testing bureau. I urge anyone who can afford their nominal fee to enlist the services of such experts as Dr. Emily T. Burr of the Psychological and Vocational Service, Dr. Henry Link of the Psychological Service Center, or Dr. Johnson O'Connor, of the Human Engineering Laboratory. Treat yourself to a complete quizzing and take advantage of the new vistas that may thus be opened up.

These vocational tests, designed to discover your unsuspected abilities and aptitudes, are administered by two kinds of agencies: private bureaus of the type mentioned above—which can be found in almost every large city—and state placement services about which I shall have more to say later on. The purposes and ends of these groups overlap to some degree; in other words, most of the placement bureaus have a vocational testing affiliation which examines for placement, and vice versa.

You may ask why you should go to a private organization which offers no actual employment service if a free state agency is on hand to provide testing as well as placement facilities. Your decision will ultimately depend upon two factors: the kind of person you are and the kind of job you want. Do you lose patience and champ at the bit waiting for your turn or standing in line? Do you demand the more individual personal attention you get from a private physician even though your local clinic has a fine staff of doctors? Are you looking for a specialized or semi-professional post—for the sort of opening that employers do not generally bring to a state occupational bureau but prefer private employment agencies to handle for them? If you answer any or all of these questions in the affirmative, then your first choice should be a private testing bureau.

Such an organization, you must remember, will seldom find you an opening, but it may start you on a career. For it will be able to tell you, in exact terms what occupations and professions are best suited to your talents and skills. A few hours and a modest sum will provide you with a map of your capabilities along such lines as general intelligence, mechanical comprehension, manual dexterity, efficiency, speed, memory, artistic, literary and clerical aptitudes.

Strangely enough the directors of these human research laboratories have all told me that they have no *special* tests devised for the hard-of-hearing. They have found them neither necessary nor advisable since the deafened can be as thoroughly observed and measured by normal methods as any persons free of handicaps. With the possible exception of situations where speed of reaction time is of vital importance, and where pencil and paper directions are consequently substituted for verbal ones, your tests will be identical in every respect to those given to normal-eared applicants.

Let us assume you have taken the entire battery of tests and they reveal that you have steady hands and skillful fingers. In other words, that you possess a high degree of manual dexterity. According to the examiner's reports, you would do exceptionally well at tasks requiring precision and patience. Yet you feel a job grinding lenses, making fine instruments, repairing jewelry, or the like, would leave you at best completely "cold"—and at worst extremely unhappy.

Stop, look, and listen before you permit anyone to sell you a "bill of goods"! Vocational testing may well be an opportunity for reappraisal of your capacities, but the results still do not provide the *final* word in your choice of a vocation. Human nature possesses some strange and inexplicable chemistry which somehow permits us to slip into a groove running counter to all the vocational charts, scores and estimates supplied by the experts. This holds true, in particular, of an individual who either has unusual talent or has acquired a vast amount of experience before the onset of his hearing loss.

I can remember, for instance, my former German professor. Twenty-five years ago, hearing aids were about an antiquated as a Model-T Ford today. Hard-of-hearing persons were obliged to carry about with them a transmitter the size of a shoe-box which had to be placed on a table like a doctor's bag. Dr. H.—— had to contend with all these disadvantages. He was so deaf that he could scarcely hear the crowd's roars at a football game. And yet—miraculously enough—he could detect a misplaced *umlaut* or a missing sibilant every time! Don't ask me how.

Or take the case of my wife's music teacher. A former singer in Italian operas, he was so severely deafened that he had to be retired because he could not hear his cues. Nevertheless, he became one of New York's foremost choral leaders. He could not follow conversation unless it was yelled into his ear, but just let a pupil slur a vowel or slight a consonant—and his correction was instantaneous.

And I myself am doing work for which my aural defect theoretically disqualifies me. A constant succession of telephone calls and interviews are not what vocational experts would ordinarily choose for me. But I have been an editor for twenty-five years, and with my experience, training and contacts probably

fill this position more satisfactorily than some other new vocation which, as of today, may seem better suited to my hearing capacity.

Let us, however, be very pessimistic about your first attempts at job-hunting. Suppose your hearing disability is very great, you have unusual difficulties in adjusting; you are financially "low"; and all your efforts at using normal methods fail. Your next step then should be to consult a state placement bureau.

If you do not know where your community's facilities for this purpose are, get in touch with your state Office of Vocational Rehabilitation or your state university. Local chapters of the American Society for the Hard of Hearing will also provide information for the asking. Residents of smaller towns should check with their library, post office, Chamber of Commerce, Department of Welfare, or municipal hospital—one or all of these are equipped to give out the information you seek.

You should remember that every state—every large city—has various special boards and commissions to aid you in getting placed. Do not hesitate to consult them for fear of being classed as a charity case or a miserable misfit. They are agencies maintained by the taxes you pay and are designed to help *all* to whom they can be of service.

In the Division of Vocational Rehabilitation of the New York State Education Department, Frederic G. Elton, District Supervisor, describes their work as follows: "In co-operation with many persons and agencies, such as the League for the Hard of Hearing and the Committee for the Care of the Jewish Deaf, the State is prepared to make a careful analysis of the work abilities and qualifications of any deafened person; to secure complete and competent medical service for the purpose of determining the type of deafness and the possibility of improvement by treatment or operation; to give them, on the basis of such analysis and medical report, a physical and vocational plan as the needs appear; to provide the treatment and the operative attention, if recommended and indicating an improvement in the hearing of the individual; and to initiate, pay for and supervise any vocational training course which has been found necessary and profitable in preparing the deafened person for suitable and satisfactory work. Finally, this Division will aid that person or any other deafened person, trained or untrained, to secure employment in a work in which the disability will be no handicap or in which that handicap will be reduced to a minimum of job interference."

Here every applicant is handled as a separate human being. Service is organized on a detailed casework basis, analyzing family history, schooling and training, illnesses, resources, previous earnings, interests, hobbies, affiliations, and the like.

A thumb-nail sketch of the procedure might give you some idea of how the Division of Vocational Rehabilitation functions. First of all, you make your application and have a talk with a special interviewer who lines up the essential facts in your case. The Division then gets a complete medical report from your family doctor or sends you to one of its own staff for a check-up. Next, you go to its psychologist or to the Vocational Testing Bureau for tests to determine your general intelligence, dexterity, efficiency, comprehension, interests, abilities and aptitudes; if certain skills are discovered, these tests will be supplemented by others more highly specialized. Tests alone, however, are never relied on as the sole index for vocational direction; they serve rather as an aid in planning. What the combined findings reveal will determine your program of study. To provide facilities for the courses its staff recommends is the first objective of the Division; its final aim is to use its placement department to obtain the right position for you whenever you are prepared to assume it.

Such bureaus as this are open to everyone and all services are entirely *gratis*. A case can never be marked "closed" until placed in a suitable occupation. According to their operating slogan, there is a position for every disabled person, whatever his disability, if he has proper training and the job is in line with his abilities. And these agencies know what they are talking about—since they have handled thousands of registrants with problems similar to your own. Indeed, although the hard-of-hearing total only 11 per cent of their cases, they comprise 20 per cent of their placements!

No better testimony could be offered as to the value of this type of service, than the advice of Miss Ann Lehman, Senior Employment Consultant for the War Manpower Commission. Miss Lehman, herself hard of hearing, is one of America's outstanding career women. Speaking of the range of vocations open to those with aural impairment, she says:

To list jobs suitable for the hard-of-hearing would mean listing practically the entire range of identified jobs. As you may know, this listing in our Occupational Dictionary totals about twenty thousand.

This does not mean, however, that the hard-of-hearing can do everything or that a hearing impairment never constitutes a serious handicap when seeking employment.

The extent of the limitation depends upon the type and degree of deafness, and the individual's ability and willingness to achieve normal contact with his fellow men through the use of hearing aids and lip reading. A careful analysis must be made on an individual basis that will include not only the foregoing, but also such factors as ability to hear under certain situations and specific sounds. The ability to hear over the telephone is important in secretarial work; the ability to hear a child's cry even though asleep, is important for a child's nurse.

The cause of deafness is a factor that must always be considered when placements are made. Most cases of partial deafness are progressive and therefore the optimum in working conditions should be sought.

For cases of nerve deafness, job locations that are noisy and cause extra strain on the auditory nerve should be avoided as well as jobs that enervate nervous energy through stress. If the disease has impaired the semicircular canals, jobs requiring balance or located on high places are unsuitable.

Similarly, for cases of middle ear infection working

conditions likely to cause upper respiratory infections should be avoided. These include jobs involving sudden temperature changes and those in damp, wet or cold environments.

These briefly are the factors we analyze regarding the type of deafness. For employment purposes, the hearing acuity with the aids is more important than the hearing when unaided.

Hazards due to lack of hearing are not found so frequently as expected. The eyes are an excellent substitute for hearing when moving objects constitute the hazard, as when driving cars on the highway. Minor job engineering makes the substitution of lights for bells an easy shift, and one that is frequently made.

From the foregoing, you can realize that generalizations are difficult but depend in each case upon the individual's endowment of skills, training and emotional make-up as well as his loss of hearing power.

In your contacts with state or private vocational agencies, you will undoubtedly find that the great majority of their personnel are patient, understanding, sympathetic men and women with a large measure of imagination and ingenuity. They do a truly magnificent job, worthy of wholehearted admiration and respect. Occasionally, however, you may run across a disinterested, dull-witted counselor whose only qualifications for the post he holds seems to be "the people he knows." Naturally, such an experience discourages even the optimists. And it is a wise thing not to conclude hastily that the trouble lies with you or that your condition is hopeless. Such an individual will be lacking in tact and insight no matter whom he "advises"—and regardless of whether he is handling deafness, dumbness, blindness or any other disability.

I have a charming and brilliant friend who is unable to walk without the use of crutches because of infantile paralysis. At the age of not quite seventeen, she managed to come through college at the head of her class, with a *summa cum laude* degree and a fellowship for graduate study in Philosophy at one of our finest universities. When she sought the aid of a placement service, she unfortunately stumbled across a misfit of the moronic order just described. He summarily dismissed her with: "We don't understand why you were advised to come here. We wouldn't know what to do with you—you've already got an education! . . . Our curriculum includes wire winding, flower making, plugboard operating, artificial-limb construction, stapling, leathercraft and woodwork." And for some strange reason—perhaps because it was first on the list—the bureaucrat believed that wire winding might be the best choice for my young friend, who at the moment also happened to be grappling with her Ph.D. thesis!

Not to leave the story without its happy ending—I must add that, merely by using all the normal job-hunting techniques, she has found her own niche in a full-time editorial position on the staff of a leading magazine.

While her case may be extreme, it nevertheless shows that faith and will-power can succeed even against the barriers set up by "man's inhumanity to man." The essential fact remains that you cannot afford to let the wall made by a few people's stupidity become your "Wailing Wall." Grit your teeth, square your shoulders, curse resoundingly if it helps—but never give up until you have found the right facility and the right person there to guide your individual case. Your perseverance will pay off in happiness and personal satisfaction.

The understanding adviser knows that abilities, not disabilities, are of paramount importance. His function will be to help you "accentuate the positive and eliminate the negative"—to make you a square peg in a square hole. He will ask you to submit an inventory statement of assets plus liabilities, the very same type of inventory, by the way, that he would require in placing a man with normal hearing. To him, a physical defect is simply one more factor to be considered as part of the total picture.

In any career, aptitudes will determine success; liabilities will condition it. People succeed because of what they can do—not by what they can't. Consequently your talents and capacities—not your handicap—will determine the job you can best fill. Suppose you regard the phrase, "courage to face the facts and make a proper adjustment to them" as a bookkeeping entry. Are you prepared to put it on the right side of the ledger?

You probably assume that deafness heads your list of liabilities. But what about your education? And have you weighed your voice, personality, your capacity for working in harmony with others, your willingness to take directions and corrections? If you have learned to think of yourself as an integrated personality rather than as a cripple—if you remember that a man is more than his ears—you will be able to appraise more correctly your training, enthusiasm, and adaptability. There is no job in existence which does not place a premium on these qualities!

But if you are hard-of-hearing and try to conceal it from your employer or co-workers, you are fast riding for a fall. You will earn yourself an unenviable reputation for surliness, inattentiveness, or just ordinary stupidity. By all means admit your physical limitations and get your associates to co-operate with you wherever necessary.

People who flatter themselves they can play ostrich fool no one. I recently met a young dentist, with a very noticeable hearing loss. Finally I prevailed upon him to buy an instrument, which he subsequently wore mostly in his bureau drawer. When I pressed him for an explanation, he said: "Patients expect a professional man to be physically perfect." I reminded him that practically all hair specialists are bald, yet I could not shake his conviction. His practice is gradually fading away . . . I suppose people feel that yelling with a toothache involves too much effort. One thing is sure. Unless he snaps out of his present attitude, he faces a bleak future.

But fortunately the prospects are rosy for anyone with the courage to come to grips with himself and his weakness. Even where the hearing loss has been ex-

treme, most of us can look forward to standing on our own feet. It inspired me to read the records of graduates of the California School of The Deaf, whose students have suffered (often from birth or infancy) losses far greater than those of 95 per cent of the possible readers of this book.

Although one young man had only 20 per cent of his hearing left at the age of two, at the completion of his training he was employed as an assembler leadman at $60 per week. Another graduate became totally deaf when twenty months old. Having expressed an early interest in baking, the school gave him a seven-year course in its experimental bake shop. The examiners' report states: "He is enthusiastic, but self-disciplined; not mechanically inclined; has strong aesthetic tendencies. He has been regularly employed as a cake decorator at $48 weekly since graduation."

To say that such records indicate what directed effort can do in developing abilities despite a severe handicap—seems a trite understatement.

Indeed, all our findings point to one conclusion: If fate condemns us to deafness, today is the best of all possible times to tolerate such a blow. I say this partly because of technical improvements in hearing aid construction, partly because of vast strides in teaching methods—but more particularly, because of the radical shift in employment practice and policies.

Before the war, as Laura Stovel of the American Society for the Hard of Hearing has pointed out, "Industrialists had great respect for efficiency experts—and efficiency experts apparently had equally great respect for physical perfection." Since Pearl Harbor, however, industry has opened its doors to the deafened—reluctantly at first—then more willingly as we chalked up a significant score of man-hours for the war effort.

No longer classified as "unemployable except with sharp limitations," we hard-of-hearing can now look forward to holding our legitimate place in the industrial world. Naturally should a depression follow in the wake of present prosperity—in the manner of all newcomers—we may be temporarily pushed to the sidelines. Like women in industry, we are still somewhat on the marginal fringe. But we have been given a chance to prove ourselves—and in the process, our performance has been acclaimed even by the sceptics in business and the professions.

Modern Vacuum Tube Hearing Aid

PART TWO

Aside from my own introductions each of the chapters in the following section represents a digest of the excellent material contained in three books of the *Better Living Series,* published by the Sonotone Corporation, of Elmsford, New York. Based on carefully correlated research data, all the books in the *Series* have been written and edited by recognized authorities, and present the most recent information available on these particular subjects.

But in performing the various exercises at the end of each chapter, hard-of-hearing readers should not assume that they have given themselves *courses.* The exercises included are merely meager *samples,* selected to offer some idea of what the subject discussed is like. For any program of serious study, the next step should be to contact your local branch of the League for the Hard of Hearing for information about approved courses and about the textbooks available at bookstores and your public library.

L. B.

Lip Reading

Lip reading—more accurately called speech reading—is a somewhat misleading term. The skill it refers to is actually a trained ability to derive meaning from watching not only a speaker's lips, but also movements of other parts of the face, expression, gestures. "Your face, my thane, is as a book where men may read strange matters."

Speech reading means all things to all men. Some people regard it as a parlor trick, a "cute" accomplishment like playing a mandolin or doing card magic. Others view it as the perfect answer to hearing difficulties. They seem to think that a good lip reader has no need of a hearing aid; he can be deaf as a post but understand everything.

Both points of view are wrong. Except for the truly deaf, speech reading is not a substitute for a hearing aid. Rather it is a supplement to it—an invaluable adjunct. The most expert speech reader understands better if he can also use a hearing aid. On the other hand, lip reading enables him to fill in the gaps for certain sounds he may otherwise miss.

So far as that goes, we live in a noisy civilization. Between traffic rumble, factory clatter, restaurant echo, and subway grinding, people with perfectly normal ears could profit by a knowledge of the art.

Authorities advise that even persons with slight hearing losses should study speech reading. But human nature being what it is, the advice seldom appeals to those who obtain good results with an instrument. However, preparedness offers protection in case the impairment becomes worse, for you can learn more easily while you still have left a relatively large amount of hearing.

To the deafened, lip reading has always been a must, but we should realize and appreciate its limitations. To begin with, it is useless with respect to non-speech sounds—including horns, bells, whistles, sounds of nature, music. Though one can undertand face-to-face conversations through this medium, he still misses the emotional nourishment and fully rounded sensory experience which hearing provides.

"To find the mind's construction in the face" is not an easy accomplishment to pick up on the run. And becoming truly schooled in it demands an aptitude which not everyone possesses. While most hard-of-hearing persons develop some slight facility more or less unconsciously, an expert technique nearly always calls for a teacher. Up to date, authorities have generally agreed that it takes two years' practice to become proficient. Now, through new short-cut methods and marvelous teaching, the Army and Navy have shortened this period to eight weeks!

Moreover, hearing with your eyes demands the closest visual concentration. Imagine yourself, your ears plugged with cotton, studying the mouths of others in an effort to follow their conversation. You cannot daydream or relax your attention for a second. But tiring as it may be, doctors have found, particularly in cases of children with nerve deafness, that a knowledge of speech reading retards further loss of hearing. By shifting the burden of listening to the optic nerves, the eyes relieve the tension on the aural nerves, and give them an opportunity to relax.

Lastly, lip reading is of no advantage for spooning in the dark—no pun intended! Without sufficient light around the mouth, you cannot follow lip movements. Test this out in a play or at the movies. Unless the stage is well lighted, the characters face you, and you sit near the front, everything seems a blur. Ordinarily, you are at your best following the conversation of only one or two people. When a group is scattered about a room, and you never know who is going to talk next, you are apt to muff the ball. Obviously, you will completely lose words spoken behind you or so far to the side as to be beyond your range of vision. And of course, men with pipes clenched in their teeth, or with their hands in front of their faces, incite you to thoughts of murder!

On the other hand, speech reading makes understanding possible under conditions of distance or noisy surroundings that would handicap even someone with normal hearing. It affords good training in mental alertness—something to fall back on in case of sudden instrument failure.

With the knowledge of hearing loss and its consequences, electrical hearing aids, and speech reading, anyone who has sustained damage to his ears can nevertheless look ahead with confidence.

L. B.

THE WORLD that comes to him who hears is not identical with the world that comes to him who hears not. To make these worlds more nearly the same, science offers us hearing instruments; education offers us opportunities to train our eyes and minds to a point where the loss of hearing is infinitely minimized. It is of vital importance that we keep whatever residual hearing we possess and that we make the maximum use of it; for one reason, it is our best means of keeping our natural voice quality. When tests prove that our hearing is below normal, we should at once set about making use of the best supplements to a hearing loss: a hearing aid and lip reading.

When suggesting any course of lip reading to a hard-of-hearing acquaintance, one is often met by the reply: "Oh, I am not deaf enough for that. I get along pretty well. I'll wait until I can't hear." As a matter of fact, the study of lip reading should be undertaken in the very early stages of deafness; first because helpful habits should at once be established, and again because it is well known that many cases of deafness are progressive and the need of lip reading may become more and more imperative.

It would be unfair to a prospective student to proclaim that lip reading is an easily acquired art or that it is a perfect substitute for hearing. There are only a very few natural lip readers, but practically every person noticing a loss in acuity begins to do some lip reading. (How often the slightly hard-of-hearing think that they hear when really they are *seeing!)* To become an adequate lip reader, however, a student must be prepared to work hard and long. And he must also be ready to face the limitations inherent in the art.

Reconciled to the fact that his lost hearing cannot be perfectly replaced, the student will learn with persistent study that lip reading is an indispensable crutch. There will be times, having mastered the art, when he will read a speaker's lips as easily as a printed page. There will be other less happy times when lip reading will be as difficult as scaling the heights of Mt. Everest on crutches.

The ease of a student's work unfortunately depends upon many factors over which he has no control. Distance, distracting gesticulation, conversationalists who are either "pacers" or "head-waggers" comprise only a few of the obstacles which beset the lip reader. How the speaker uses the organs of speech that reveal most to the lip reader, the expressiveness of the speaker's face and the amount of light on his face—all of these may make the difference between success and failure.

Regrettable though the fact may be, nevertheless something like one-twentieth of our population are sufficiently handicapped by a hearing loss to make communication unreliable. Both spiritually and economically, then, the mastery of the "art of being deaf" would be a tremendous asset to our national well-being. Lip reading combined with a properly adjusted hearing aid may provide the bridge to a bright new horizon of self-assurance, poise, freedom from embarrassment, full participation in the world of normal contacts. Victory over physical disability, success in holding one's place in society, the sense of independence, the consciousness of making life a little more pleasant for those around us—in all of these lip reading plays a vital part.

Every teacher of lip reading aims to develop the following in her students: powers of concentration and observation; quickness and accuracy in the use of the eyes; ready intuitions and synthetic powers to facilitate combining elements into a whole; familiarity with hundreds of visible words and the ability to recognize them on the lips; an enlarged vocabulary; broader interest; a pleasant facial expression; and a sense of humor.

All this is a far-reaching program; its success depends more upon the student and his particular turn of mind than upon his instructor. He who brings a *synthetic* mind to the task has an invaluable advantage from the very outset. He who comes with an *analytical* mind will doubtless become impatient and discouraged because he is over-anxious about the minor words which serve only as chains between the more important ones. As a pianist reads the composer's phrase and not the separate notes, the analytical type must be trained to use his imagination and knowledge of sentence structure to grasp the whole thought—not to pause for one word but to aim at the general idea.

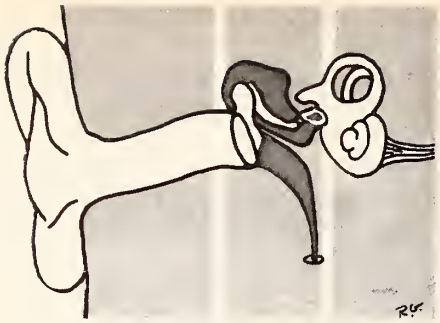
We may point out here the importance of what has been termed the "negative" side of lip reading. Many sounds in our language are so formed as to be *seen* as well as heard: for example, the lip movements for "f" and "v" and "sh" and the action of the tongue in pronouncing "th" serve as traffic lights for a good lip reader. Easy recognition of scores of words (like "father," "fish," "shadow") will permit greater mental effort to be reserved for the more difficult *invisible* words.

The following exercises are primarily intended to show how much of our speech is readable on the lips and to make the student realize that familiarity with *visible* sounds is an essential part of his equipment.

The ideal plan of study is a course of lessons with an experienced teacher and regular practice periods. (The Volta Bureau, Washington, D. C., will provide free information concerning private teachers and public school classes as well as organizations which offer lip reading lessons.) But the exercises suggested here will serve as a basis for work and should convey an idea of the lesson procedure in any accredited school of lip reading.

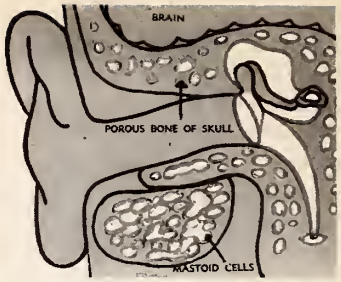
Even before reading the exercises over to himself, the student should practise them with an assistant. In all probability, a new pupil will be unable to understand every word; as long as he grasps the meaning sentence by sentence, however, he should continue with this form of practice. If he fails to catch the thought of the sentences, he would do well to practice them with a mirror and then to have the work given by an assistant.

Mirror practice produces the best results when con-

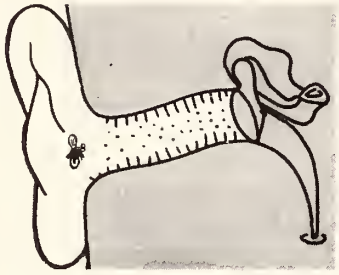


External ear—Middle ear—Inner ear

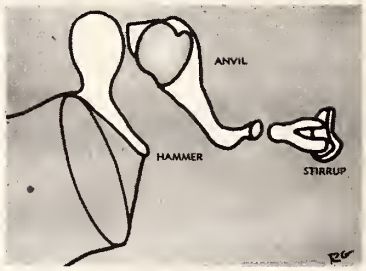
Fast climbs and drops create unequal pressure that can be relieved by opening mouth (Eustachian Tube) Parachutists shout Geronomo to keep drums from rupturing



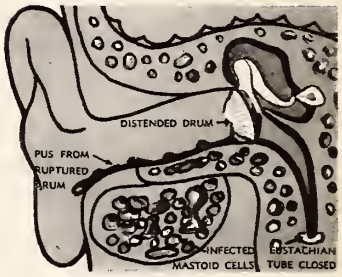
Healthy ear shows the porous bones areas and eustachian tube opened and unenflamed



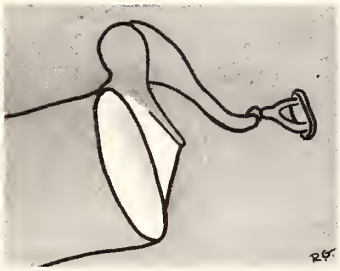
Ear canal is lined with hair to repel insects



Hammer — anvil — stirrup (ossicles)



Infected ear showing swollen linings and pus filled middle ear and the ruptured drum

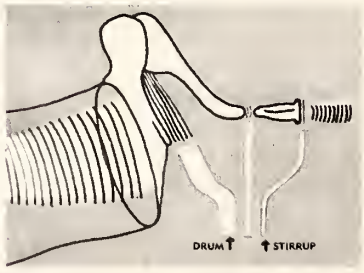


The Drum is a tough membrane that makes vibrations from sound

Tensor tympani acts as an emergency brake

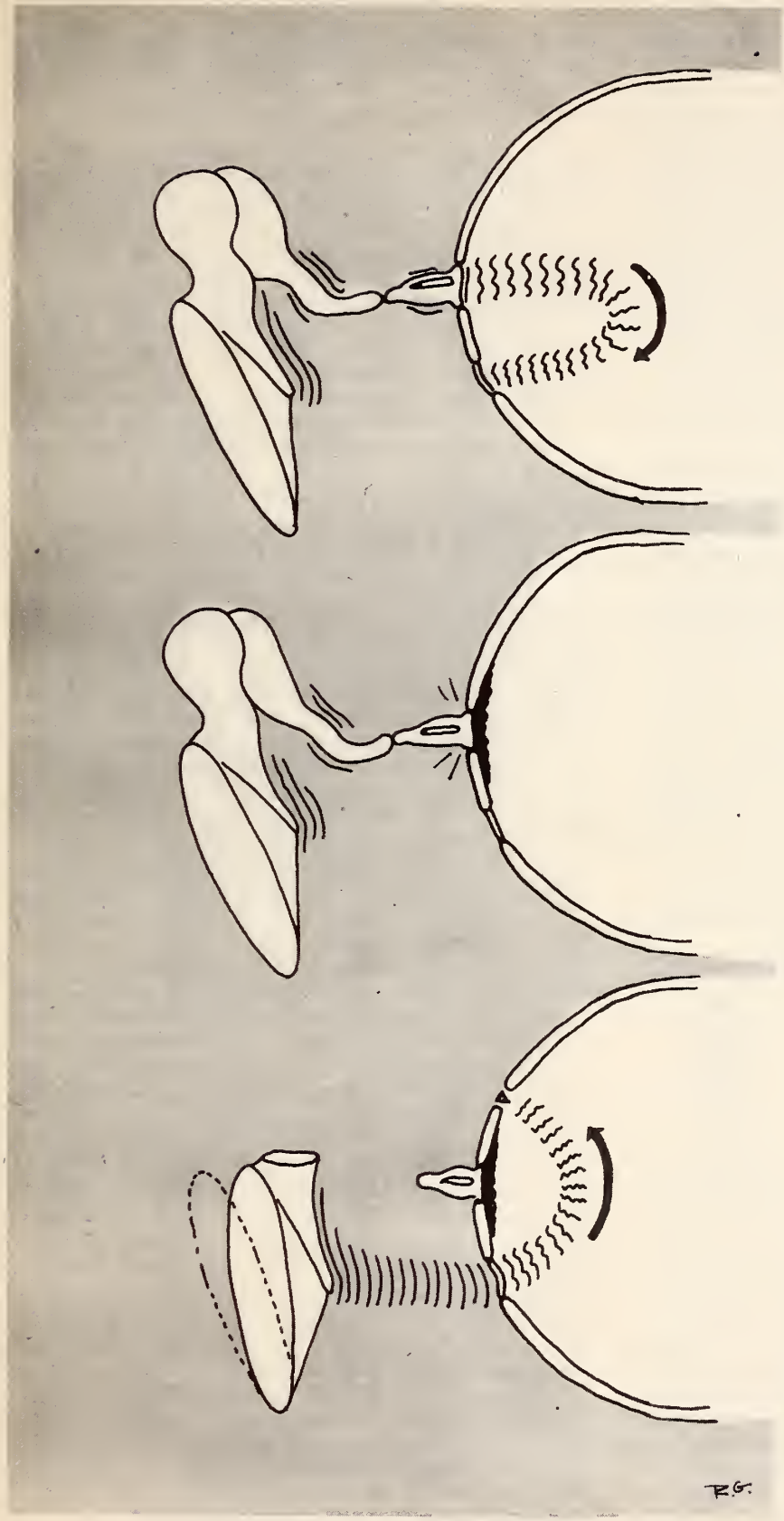
A punctured drum offers a doorway to germs

Eustachian Tube connects the ear to the throat



Ossicles are shown decreasing sound vibrations from drum to the cochlea

Wax on ear should be removed by doctor



A Normal hearing function

B Stapes fixed by otosclerosis

C Lempert surgery, makes new window above the fixed stapes (with plug to prevent growing over), he removes the anvil, cuts head from hammer and tilts drum in direction of round window now used for sound entry From drum to cochlea is now air conduction

centrated into ten-minute periods three times a day. It is important to remember not to exaggerate the movements, but to speak naturally and with careful enunciation. In order to know how sounds are formed and how they are revealed on the lips, the student should consult a standard text on lip reading (such as *Jena Method of Speech Reading,* by Anna M. Bunger). He will learn that vowels are made by shapes of the lips, tongue and throat; that consonants are made by movements of the organs of speech. The result is a constant passing from shape to shape and movement to movement, revealed to the eye chiefly on the lips. In mirror practice, the student must always watch for definite shapes and movements, thus forming the essential habit of associating them with the corresponding sounds. He should study the following sounds as revealed on the lips in the groups of words given below:

The sound for "th" is made by placing the tongue between the teeth, as in "the."

The sounds for "sh" and soft "ch" are revealed by a somewhat square, forward movement of the lips, as in "sheep," "cheap."

The sounds of "m," "b" and "p" are revealed by a closed position of the lips, as in "may," "bay" and "pay." (Although the sound for "m" is nasal, the revelation for the lip reader is the same as for "b" and "p.")

The sound for short "ă" opens the mouth wide and extends the lips, as in "ham."

The sound for long "ō" tends to bring the lips forward into a rounded shape, as in "hōme."

The sound for long "ē" also extends the lips but makes a very narrow opening between the lips, as in "mē."

The sound for "h" is made with the breath and is not seen on the lips.

The sound for "k" or hard "c" is made in the cavity of the mouth and is not seen on the lips.

Short "ă" Sound	Long "ō" Sound	Long "ē Sound
mash	poach	peach
map	mope	beam
sham	show	theme
hath	both	heath
ham	hope	heap
ash	coach	each
cap	cope	keep

Whenever vocabularies are being practised, the assistant should give the words one by one, according to the order in the text, asking the student to repeat. He should then change the order until the student has had a thorough drill. Next he should proceed to read the sentence containing the vocabulary words in the textbook order. When they have been well mastered, he should read again with a change of order.

For use in practice periods, the following suggestions will prove helpful to the student's assistant:

1) He should always have the light on his face.
2) He should always speak naturally and clearly, with careful enunciation. Let him beware, however, of exaggeration, of using his tongue too freely, of thrusting his lips forward uncouthly.
3) In the beginning, he should retard his tempo to a slight degree, while still speaking naturally.
4) He should speak in a voice low enough to be inaudible to the student.
5) He should keep his head well up in order that the student may have full opportunity to see the action of the tongue and lips and to observe facial expression.
6) He should avoid unnatural gesticulation with his hands.
7) He should not repeat single words (except in the vocabulary practice) but should always repeat the entire thought.
8) He should not give an undue amount of repetition, thus causing the student to rely upon this. He may give a word or a sentence as often as three times, perhaps; but if the student fails to understand, he should then show the missed word. in the case of vocabulary practice; and in the case of sentence practice, he should either write the key word or give it in an audible voice, and then repeat the sentence.
9) He should be very careful not to tire the student with too long practice periods. In general forty-five minutes will be found quite adequate at one sitting.
10) A typical practice period might be divided as follows:
    1) Rapid review of 25 to 50 in Familiar Colloquial Forms, Section 1..
    2) Drill on words with "th," Section 2.
    3) A group of ten or more proverbs in advance with a review of those already worked on. Section 3.
    4) A group of eight or ten homophenous words, (those which have a similar appearance on the lips, e.g.: "ice" and "eyes"; "summer" and "supper.")
    5) Conversation developed from questions in very simple form about some subject in which the student is interested, about his family, about the weather, etc.

EXERCISES FOR HOME PRACTICE IN LIP READING

Section 1—Common Colloquial Speech

In all exercises the assistant should show the student the topic. In this section, he should read the sentences in order, giving three chances for each. If the student cannot repeat at the third reading, a key word may be written or audibly spoken. (In Sentence 1 for instance, the key word is "pie.") The group should then be reviewed by changing the order of reading and by increasing the tempo up to the maximum that the student can take.

1. Why can't I have another piece of pie?
2. Why can't I have an apple?
3. Why can't I go swimming?
4. Why can't I go fishing?
5. Why can't I stay up as long as you do?
6. Why can't I take my white mouse to school?
7. Why can't I have my dog sleep in my room?
8. I wish I could go to the ball game.
9. I wish I could go fishing.
10. I wish I could drive a car.
11. I wish I didn't have to go to Sunday School.
12. I did brush my teeth before breakfast.
13. I am telling you the truth.

14. I am not teasing Sister.
15. Sister pinched me.
16. I wish I could have a permanent wave.
17. Why can't I stay home from Sunday School?
18. Why can't I have another piece of candy?
19. Why is Brother so mean to me?
20. Don't make me wear my overshoes.

FAMILIAR COLLOQUIAL FORMS

(1) How are you? (2) Do you feel well? (3) How is your mother? (4) Is your mother sick? (5) How is your sister? (6) How is the baby? (7) How are all the family? (8) It's very warm this morning. (9) This is the hottest day we have had this month. (10) Do you like warm weather? (11) It is very warm in the house. (12) There is a good breeze on the porch.

(13) It is very damp this morning. (14) The wind is from the west. (15) I think we shall have snow. (16) A northeaster is blowing up. (17) We have had one snow storm after another. (18) The boys are making snow balls. (19) The boys have gone to skate on the river. (20) I think it will rain before night. (21) Those clouds in the west look like rain. (22) I want to go out for a walk. (23) Do you ever walk before breakfast? (24) What time is it?

(25) Have you the correct time? (26) My watch is half an hour slow. (27) My watch is out of order. (28) I got up at half past five. (29) I got up to catch the train for Washington. (30) Did you go to the White House? (31) Washington is the most beautiful city in the United States. (32) What time does the boat leave the wharf? (33) The ferry boat leaves at two o'clock. (34) What time did you have breakfast this morning? (35) My mother never has breakfast until half past eight. (36) Did you have fruit? (37) What kind of cereal will you have? (38) Will you have cream and sugar on your oatmeal? (39) I am very fond of coffee. (40) Do you like black coffee? (41) My grandmother always has tea for breakfast. (42) Can you have lunch with me on Friday? (43) What shall we have for lunch? (44) Do you care for a lamb chop? (45) Will you have a salad? (46) What kind of salad dressing do you prefer? (47) Shall we have some strawberry ice cream? (48) May I have some cheese and crackers?

(49) Are you going to the post office? (50) Shall I bring you some stamps? (51) I want twenty-five two cent stamps and fifty threes. (52) How far is it to the post office? (53) Can I walk to the post office? (54) The street car runs right by the post office. (55) You can easily walk it in half an hour. (56) How much did you pay for the farm? (57) How many acres of land have you on the farm? (58) We have only seventy-five acres. (59) Have you any sheep? (60) How far is the farm from the railway station?

(61) Have you ever been on a ranch? (62) The ranch was thirty-five miles from the railroad station. (63) The weather was perfect all summer. (64) I have never seen so many wild flowers in my life. (65) What is the name of that large white flower that grows on a bush? (66) I think the apple blossom is one of the loveliest flowers we have. (67) I love the lily of the valley. (68) Do you ever work in your garden before breakfast? (69) I have flowers all summer long. (70) I suppose you have chrysanthemums in the fall? (71) Where is your home?

(72) I have always lived in the East. (73) My father and my mother were both born in Massachusetts. (74) Is Boston the capital of Massachusetts? (75) Is your home in the city or in the suburbs? (76) Have you a telephone? (77) Shall I call you up this evening? (78) Will you telephone before twelve? (79) I will call up your wife between eleven and twelve.

INTERROGATIONS CONTAINING "OR"

1. What shall we have for breakfast?
   (1) Coffee or tea? (2) Oranges or grapefruit? (3) Oatmeal or shredded wheat? (4) Toast or muffins? (5) Boiled eggs or scrambled eggs? (6) Lamb chops or sausage?
2. What shall we do this evening?
   (1) Go to the opera or to the theatre? (2) Take a walk or take a drive? (3) Stay at home or go out and make some calls? (4) Play bridge or sit out on the porch? (5) Take a ride on the bus or take a drive in the park? (6) Go to the supper at the church or go for a sail on the bay?
3. What kind of weather did you have while you were on the ocean?
   (1) Was it smooth or rough? (2) Was it warm or cold? (3) Did you have sunshine or rain? (4) Did you have stormy weather or smooth sailing? (5) Was the sea as smooth as a mill pond or was it choppy? (6) Did you have heavy fogs or light showers? (7) Was it damp and cold or soft and warm?
4. What is your favorite magazine?
   (1) The Saturday Evening Post or the Ladies' Home Journal? (2) Life or Punch? (3) Time or Fortune? (4) Harper's Magazine or the Atlantic Monthly? (5) The Geographic or the Reader's Digest? (6) The Woman's Home Companion or the Volta Review? (7) Newsweek or Better Living Magazine?

QUESTIONS WITH VARIOUS ANSWERS

1. Have you any idea how old she is?
   (1) I think she is about forty-five. (2) She is almost fifty. (3) She was forty-two on her last birthday. (4) She is exactly seventeen. (5) She will be sweet sixteen in March. (6) She is past thirty-five. (7) She must be sixty-five if she is a day. (8) She looks much older than she is. (9) She is four years older than her brother. (10) She is older than I am. (11) I haven't any idea how old she is. (12) I haven't the remotest idea.
2. How many children are there in the family?
   (1) They have three children, all boys. (2) There are five children, two boys and three girls. (3) They have six boys and one girl. (4) They have two boys and two adopted daughters. (5) They have a good old-fashioned family of ten, five girls and five boys.
3. How is the house situated?
   (1) It is right on the beach. (2) It faces a large open square. (3) It stands on top of a high hill. (4) It is opposite the park. (5) It is on the east side of the avenue. (6) It stands on the bank of the river. (7) It is not very far from the White House. (8) It is next door to the Presbyterian Church. (9) It is two doors south of the post office. (10) It stands all by itself with its back to the meadows.
4. Where did he make his money?
   (1) He made his money in the shipping business. (2) He made his money in the automobile business. (3) He made his money in shoes. (4) He made his money building bridges. (5) He made a fortune in oil. (6) He spent twenty-five years in the coffee business in South America. (7) He was a very successful lawyer. (8) He published one book that made a fortune for him. (9) He made a pile of money in the movies. (10) He inherited his fortune from his father.

5. Why didn t you invite Mrs. Smith to the bridge party?
(1) Because she can't play bridge. (2) Because she plays such a poor game. (3) Because she wants to talk all the time. (4) Because she pays no attention to the game. (5) Because she is so disagreeable if she doesn't get the prize. (6) Because no one wants to play with her. (7) Because she is always half an hour late. (8) Because I invited her the last time I had a party. (9) Because she always trumps her partner's ace. (10) Because my husband dislikes her so much. (11) Because she almost bores me to death.
6. Why did Jimmie stay home from school?
(1) Because he had the measles. (2) Because he had a sore throat. (3) Because he had a severe cold on his chest. (4) Because his brother had the whooping cough. (5) Because the weather was so bad. (6) Because it was raining so hard. (7) Because the snow was so deep that the roads were impassable. (8) Because he didn't have any overshoes. (9) Because the car was out of order and it was too far to walk. (10) Because he didn't want to go.

"HAVE" IN VARIOUS USES

1 What did you have for breakfast?
2. They have a large family.
3. Don't have anything to do with that man.
4. Have you read the newspaper this morning?
5. Did you have a pleasant summer?
6. You always have your own way.
7. Have you ever had the whooping cough?
8. Can you let me have five dollars?
9. I am planning to have some friends for lunch tomorrow.
10. They have a large apartment on the fifth floor.
11. Will you have a piece of cheese with your pie?
12. They have a way of getting what they want.
13. We have to leave at seven o'clock.
14. The man must have food or he will starve.
15. The boys both have Spanish but no French.

"OPEN" IN VARIOUS USES

1. My watch has an open face.
2. Shall I open the door in the dining room?
3. How shall I open my speech?
4. We always keep open house on New Year's Day.
5. The house will be open to the public for three weeks.
6. She has a very open mind.
7. This letter was open when the postman delivered it.
8. How do you feel about the policy of the open door?
9. I did not open my eyes until nine o'clock this morning.
10. Do you like to sleep out in the open?
11. The man had an open wound for over a month.
12. I think I shall open an account at the fruit shop.
13. They are going to open up a large tract of land along the beach.
14. The invitation will be open until the first of July.
15. It is an open secret that they will be married next year.

QUIZ ON "GONE WITH THE WIND"

(On this exercise, answers should be required.)
1. What is the name of the author of this book?
2. Where is she from?
3. What is this book about?
4. Is it a very long book?
5. How many pages are there?
6. When was it published?
7. Has it been popular, on the best-seller lists?
8. How many copies were sold?
9. Is it an exciting book?
10. Do you think it is well written?
11. Did you enjoy it?
12. Did you find it very absorbing?
13. How long did it take you to read it?
14. Do you remember the name of the heroine?
15. Is Scarlett the kind of woman that you admire?
16. Was there another woman in the book for whom you had more admiration?
17. What is the name of the hero?
18. Do you believe that the separation of Scarlett and Rhett was final?
19. Do you think this is a true picture of the war period in the South?
20. Has "Gone With The Wind" been made into a moving picture?
21. Who plays the part of Scarlett?
22. Who plays the part of Rhett?
23. Where was the picture shown for the first time?
24. How much do you suppose it cost to produce this picture?
25. By the way, has the author made much money out of this book?
26. How do you think the moving picture compares with the book?

Section 2—Vocabulary and Sentence Practice

Having shown the topic to the student, the assistant should read the italicized vocabulary words in order, asking for repetition. He should read again changing the order. Then giving the vocabulary word first, he should read the sentence in which that word occurs. Finally he should read all of the sentences in changed order.

WORDS HAVING "SH" OR "CH"

1. How much do they charge for a *shampoo?*
2. The weather has been very *changeable* for the last month.
3. Shall we serve *champagne* with the dinner?
4. Are you fond of *shellfish?*
5. The boy has a *sheepish* expression.
6. The apartment was in *shipshape* order by half after nine.
7. Our *chauffeur* has been with us for fifteen years.
8. I thought I would *famish* before we reached home.
9. He will *publish* his autobiography this fall.
10. Have you ever made *marshmallow* fudge?
11. Shall we have *mushroom* soup for lunch?
12. That child has a very *wishful* expression.
13. Their charge for a *shampoo* seems to be rather *changeable.*
14. We had *shellfish* for the first course and *mushroom* soup for the second.
15. He looked very *wishful* when he saw us open the bottle of *champagne.*
16. The *chauffeur* keeps the garage in *shipshape* order.
17. You will not *famish* if you eat this *mushroom* soup.
18. Why has the *chauffeur* such a *sheepish* expression?
19. Perhaps the *chauffeur* drank some of our *champagne.*
20. If they *publish* your book, I will give you a five-pound box of *marshmallows.*

WORDS WITH "TH"

1. She is the most *thoughtful* woman I have ever known.
2. I wish I had a *thousand* dollars.
3. We drove along a wide *thoroughfare* for about an hour.
4. Have you a *thermometer* in the office?
5. That was a splendid *theatrical* performance.
6. Are you going home for *Thanksgiving?*
7. Who wrote that well-known poem about a *blacksmith?*
8. We followed the *footpath* through the woods.
9. That is the largest *chrysanthemum* I ever saw.
10. I have always been poor in *mathematics.*
11. The boy is not *methodical* but he is very bright.
12. Did you study *mythology* when you were in school?
13. We saw a fine *theatrical* performance on *Thanksgiving* afternoon.
14. The old *blacksmith* has a very *thoughtful* face.
15. *Chrysanthemums* were blooming along the *thoroughfare.*
16. The *chrysanthemums* will die if the *thermometer* drops any lower.
17. I like *mythology* but I do not care much for *mathematics.*
18. You were very *thoughtful* to put the *thermometer* out on the porch.
19. My teacher of *mathematics* was very *methodical.*
20. We have a *thousand* reasons for celebrating *Thanksgiving.*

GEOGRAPHICAL VOCABULARY

1. What is the population of *Australia?*
2. How large a country is *Belgium?*
3. Is it true that the sun never sets on the *British Empire?*
4. *China* was a civilized country before the birth of Christ.
5. How long were the Children of Israel in the land of *Egypt?*
6. Have you ever been in *Germany?*
7. *Japan* is famous for its cherry trees.
8. They raise very fine coffee in *Java.*
9. *Russia* has a very cold climate.
10. What form of government do they have in *Siam?*
11. How long is the trip from *California* to the *Hawaiian Islands?*
12. Are the people of the *Philippine Islands* much like those of *China?*
13. *Australia* is a part of the *British Empire.*
14. How far is *Java* from *Siam?*
15. Is *Russia* very much larger than *Germany?*
16. How does the population of *Belgium* compare with that of *Egypt?*
17. *Japan* has been making war on *China* for several years.
18. Which are farther south, the *Hawaiian* or the *Philippine Islands?*
19. Have *Russia* and *China* been at war in recent years?
20. *Belgium* and *Germany* both have seaports on the North Sea.

NAMES OF CITIES

1. *Amsterdam* is a large and important city.
2. *Athens* has a very beautiful location.
3. *Baltimore* is on Chesapeake Bay.
4. Have you seen the ruins of *Pompeii?*
5. Does this ship land at *Bombay?*
6. What is the population of *Buffalo?*
7. *Paris* has been a well-known fashion center.
8. Did you see the Liberty Bell when you were in *Philadelphia?*
9. All roads lead to *Rome.*
10. The best flour comes from *Minneapolis.*
11. How would you like to live in *Shanghai?*
12. We sailed from *Southampton* on the first of September.
13. *Washington* is the most beautiful city in America.

MONTHS AND SEASONS

1. *April* showers bring *May* flowers.
2. Thirty days hath *September.*
3. Christmas comes on the twenty-fifth of *December.*
4. The month of *August* is usually very warm.
5. *October* is a beautiful month in the mountains.
6. George Washington was born on the twenty-second of *February.*
7. The apple trees will be in bloom by the latter part of *May.*
8. The schools all close during the month of *June.*
9. Armistice Day falls on the eleventh of *November.*
10. How are you going to celebrate the Fourth of *July?*
11. *March* is a very windy month in the North.
12. Are there thirty-one days in *January?*
13. I should love to go South for the three *winter* months.
14. "In the *spring* a young man's fancy lightly turns to thoughts of love."
15. Football is a popular *autumn* sport.
16. The *fall* is a busy time for boys and girls who go away to school.
17. Thousands of people spend the *summer* months at the shore.

DAYS OF THE WEEK and TIME WORDS

Sunday	Saturday	Dawn
Monday	Morning	Noon
Tuesday	Afternoon	Midnight
Wednesday	Evening	Week
Thursday	Night	Week-end
Friday	Twilight	Midweek

Make up sentences using these words, singly and in combination.

Section 3—Quotations and Proverbs

The quotations and proverbs should be read in the given order. When the student can repeat accurately, the assistant may add interest to the lesson by giving another familiar saying or by making some pertinent comment or by using the saying as a basis for brief conversation with frequent questions. In the exercise on Shakespeare he should ask the student to answer the questions if possible, but not to repeat them.

1. Baa, baa, black sheep, have you any wool?
2. Pussy cat, pussy cat, where have you been?
3. The north wind doth blow and we shall have snow.
4. Old King Cole was a merry old soul.
5. Dickory, dickory dock
   The mouse ran up the clock.
6. Old Mother Hubbard went to the the cupboard
   To get her poor dog a bone.
7. Birds of a feather flock together.
8. Half a loaf is better than no bread.
9. People who live in glass houses shouldn't throw stones.
10. Pride goeth before a fall.
11. Time and tide wait for no man.
12. Where there's a will, there's a way.
13. I stood on the bridge at midnight.

14. O say, can you see by the dawn's early light?
15. Full many a flower is born to blush unseen.
16. Gather ye rose buds while ye may.
17. A primrose by a river's brim
    A yellow primrose was to him
    And nothing more.
18. I will lift up my eyes unto the hills from whence cometh my help.
19. They that sow in tears shall reap in joy.
20. Where there is no vision the people perish.

HOW MUCH DO YOU KNOW ABOUT SHAKESPEARE?

1. Where was Shakespeare born?
2. In what year was he born?
3. In what month was he born?
4. What was his father's name?
5. Whom did Shakespeare marry?
6. Was his wife older or younger than he was?
7. Can you tell me how many plays Shakespeare wrote?
8. How old was Shakespeare when he died?
9. Where was he buried?
10. Would you say that Shakespeare had a very large vocabulary?
11. Are Shakespeare's plays absolutely original?
12. Have you ever seen Hamlet?
13. How many of Shakespeare's plays have you read?
14. Have you a statue of Shakespeare in the city where you live?

Section 4—Homophenous Words

In giving the drill on homophenous words, the assistant should permit the student to read the group of words on which he is to be drilled and should then repeat them so that their similarity on the lips may be carefully observed. He should then read the sentences in the given order, finally changing the order for rapid review. If he has drilled, for example, on seven groups of homophenes, he can finish the work with sentences chosen here and there among the various groups. As the student becomes more proficient in this work, the assistant may find that he can give the drill by writing only one word out of the group of homophenous words thus letting the thought suggest the other homophenes. He will find that words will be more impressed on the student's mind if he asks him to write the words as he understands them.

Blue, Blew
1. The sky is very blue this afternoon.
2. The baby has large, blue eyes.
1. The wind almost blew me off my feet.
2. The wind blew from the south.

Bush, Push
1. That is a beautiful rose bush.
2. I found five roses on the bush.
1. Please don't push me like that.
2. The man tried to push me off the platform.

Brown, Proud
1. My mother has brown eyes.
2. Who lives in that old, brown house?
1. She is a very proud woman.
2. He is very proud of his family.

Chip, Ship
1. That woman has a chip on her shoulder.
2. He is a chip off the old block.
1. What time will the ship arrive at the wharf?
2. The ship will sail on Thursday morning.

Chair, Share
1. This is the most expensive chair we have.
2. That chair belonged to my grandmother.
1. The boy had more than his share.
2. Will you share your umbrella with me?

Charm, Sharp
1. She has more charm than anyone I know.
2. This charm is made of solid gold.
1. The boy has very sharp eyes.
2. A sharp wind is blowing from the west.

Chatter, Shatter
1. The children chatter all day long.
2. I wonder what they chatter about.
1. That boy will shatter his mother's hopes.
2. Have you shatter-proof glass in your car?

Fair, Fare
1. That man is always fair.
2. What did you think of the World's Fair?
1. What is the fare to Washington?
2. I will pay your fare on the bus.

Feel, Veal
1. How do you feel this morning?
2. Do you feel like going for a swim?
1. Will you have a veal chop?
2. How much is veal a pound?

Five, Fife
1. There are five boys in the family.
2. I got up at half past five this morning.
1. Can you play on the fife?
2. This fife belonged to my grandfather.

This list of homophenous words could be prolonged at great length. Among the most common homophenes are the following—for which you should make up your own sentence-combinations:

Flower, Flour
Home, Hope
Handsome, Hansom
Hill, Ill
Ice, Eyes
Lad, Land
Lace, Lays
Many, Penny
Member, Pepper
Mention, Pension
Open, Omen
Profit, Prophet
Poise, Boys
Prove, Proof
Rice, Rise
Rhyme, Ripe
Rub, Rum
Shame, Shape
Summer, Supper
Bill, Mill, Pill
Buff, Muff, Puff
Ear, Hear, Here
Harm, Harp, Arm
Lamb, Lamp, Lap
Rabbit, Rapid, Rabid
Rope, Robe, Roam
Where, Wear, Ware
Wish, Witch, Which
Bees, Peas, Peace, Piece
Buy, By, My, Pie
Bore, More, Pore, Pour

Choose, Chews, Shoes, Juice
Man, Mat, Mad, Manned
Plaid, Plan, Planned, Plant

Badge, Batch, Match, Patch, Mash
Roan, Road, Rode, Rote, Rowed, Wrote
Palm, Balm, Pomp, Bob, Mop, Pop, Mob

Educating Your Hearing

When a baby learns to talk, he simultaneously learns to listen and to understand language. That is, the child gradually acquires a vocabulary and learns to associate the words with the objects or abstract ideas they represent. Similarly, when a partially deafened person first acquires a hearing aid, he must learn to listen and to understand language all over again. This is because his impairment has so muffled or distorted words and syllables, that he has lost "sound memory"—the ability of the brain to associate the sound of a word with its meaning.

The education of hearing has been comparatively neglected until recent years, since the need for it is less obvious than lip reading or correct speech habits. Even those with long-standing hearing difficulties seem astounded at the very idea that their ears can no longer function involuntarily. Indeed, the abstract, listless look so often seen on the face of a hard-of-hearing victim offers eloquent testimony that he has long since stopped listening!

Rear-Admiral Richard E. Byrd, in his book *Alone* says: "I feel, too, that absence of conversation makes it harder for me to think in words. Sometimes, while walking, I talk to myself and listen to the words, but they sound hollow and unfamiliar."

Educating your hearing is sometimes referred to as aural rehabilitation. Like lip reading and corrective speech, it is another crutch, which enables you to use your residual hearing to the best advantage.

Nothing can impede or delay your progress more than the glib assumption that this particular crutch is unnecessary. The average man or woman who buys a hearing aid expects to put it on—turn the switch—and pick up conversation or music with the same facility he enjoyed years before. This is as far-fetched as to believe you can take a broken arm out of a sling and pitch a baseball game, or that you can hobble out of bed with a newly healed broken leg to dance the rhumba!

Yet literally thousands of people who have purchased hearing aids discard them within a few days as "no good," simply because after a few hours' practice, they are unable to follow the complete dialogue of a play from the last row in the balcony. Today the Army and Navy have carefully planned courses in aural education so that servicemen, newly equipped with instruments, can learn to utilize these mechanical marvels with the utmost efficiency.

L. B.

Hearing and understanding of speech are two separate, though closely related, acts. Hearing involves the ear and the brain center of hearing. Interpreting and understanding speech involves far more than the hearing process alone. It is a complex function which requires the co-operation of the brain and the other senses.

From early childhood the eye and the ear co-operate to build up a "sound vocabulary." Through the whole range of human experience, the sounds of words are conveyed to the brain together with visual images of things—such as "ship," "house," "cat," and so on. The brain sorts out these impressions and stores them in separate "memory compartments," as it were. Hearing a word repeatedly establishes a link between the *sound* and its *meaning*. Thus, whenever the *sound* of a word is heard, the brain instantly associates it with its *meaning* and we say that we "understand."

Ability to make this instant association depends on hearing the word *repeatedly*—otherwise difficulty arises in "connecting" the word with its meaning. And here lies the clue to what happens after a prolonged period of hearing impairment. The sound memory fades although the visual memory of objects remains. The link between the word sound and its meaning is broken.

Here, too, we find the explanation of what occurs when sound impressions are again conveyed to the brain after a long interval of insufficient hearing. The word meanings and the sound impressions are scrambled—the links of association between sounds and their meanings are at "loose ends." Unable to associate a sound with its meaning quickly enough, the hard-of-hearing individual is confused when he again hears speech. As a result, he must go through a period of "re-educating the hearing sense"—of re-establishing those sound-object or word-meaning links which have worn thin because of dull hearing.

All this is a highly over-simplified picture of the hard-of-hearing person's problem. Normal speech is not the utterance of a few simple disjointed words. Words follow one another *rapidly* in whole sentences. The listener must associate almost instantaneously in order to "follow the meaning." If his associational powers are "out of practice," several more words have been said while the listener is still struggling to grasp the first one. Other factors also combine to complicate the problem further. Ordinary conversation is not limited to simple monosyllables. Just think how often we use words like "automobile," "locomotive," "physician." Meaning, moreover, involves not only simple and concrete things like "leaf" or "ship," but abstract concepts like "literary" and "political."

Re-education is also affected by the *type* of hearing loss an individual may have. Impairments of the inner-ear type, for example, result in *distorted hearing*. Though many variations are possible, the major confusions arise from hearing "oo" sounds instead of "ee" and from an inability to distinguish between

words like "stone," "shone," "phone," etc. Through the repeated hearing of distorted sounds, the individual builds up a distorted sound vocabulary all his own. For him, "leaf" sounds like "loo," "beet" like "boo," "ship" like "up." In re-educating his hearing sense, he must break down this association of meanings with distorted sounds. He must relearn the true sounds of speech as it is spoken in the world around him.

Regardless of the type and degree of his impairment, however, the hard-of-hearing person must learn to *listen* if he wishes to learn to hear again. For the normal ear, hearing is an automatic process; listening, a mental exercise. With impairment of the hearing faculty, the process ceases to be automatic. It becomes an exercise in listening, a continuous call upon conscious effort—effort so great that many of the hard-of-hearing cannot long sustain it and give way to listlessness and indifference instead.

Unfortunately, failure to maintain systematic and persistent *attentive listening* only hastens the deterioration of hearing. When the brain centers are not called upon to associate sounds with visual images, they become "rusty." To one individual this may mean losing the ability to interpret the meaning of speech; to others it might spell impairment in the perception of musical tones; to still others, both. People who have a good ear for music, or who readily acquire foreign languages, generally find it easier to revitalize their hearing powers. Lazy listeners, too prone to listen to their own thoughts rather than to what is being said by others, aggravate their difficulties. Like any other bodily function, hearing must be constantly exercised to prevent atrophy through disuse.

The use of a skillfully engineered hearing aid is fundamental to any program of re-educating residual hearing. Such an aid cannot arrest the physical progress of impairment. But, by exercising the function of hearing and understanding, it does prevent further deterioration—and it accomplishes this through the very *act of hearing* that it makes possible.

Just as in buying a radio or a phonograph, it is wise to select a high quality hearing aid that reproduces sound naturally and without distortion. It is important that the instrument be fitted to the particular characteristics of the user's hearing loss. This will provide compensation in the range where it is most needed, and thus assure the greatest possible use of the individual's remaining hearing.

Naturally, the extent, character and duration of impairment all influence the results obtained with a hearing aid. But the degree of the user's own willingness and co-operation is often the master key in determining how much the aid will actually help him. Here is the time to remember the magic formula P.E.P.—the PATIENCE, EFFORT, PERSISTENCE that alone can enable him to win back a good portion of what he has lost.

In all cases we may safely set down this general principle: *hearing will improve by hearing* as the user of a hearing aid gradually finds himself at home again in the world of sound. The preliminary adjustment period may last from a few weeks to several months. During that time here are some good rules to keep in mind:

1) Save a lot of disappointment and discouragement by overcoming the desire to hear too much too soon.
2) Do not try to hear in large groups, in halls or meeting places until sufficiently familiar with instrument adjustments to compensate for distance hearing.
3) At first, nervous strain, confusion and even headaches may result from overstimulation of hearing organs that have been inactive for years. This is just a case of good old "Charley-horse" and disappears with continued exercise.
4) Wear the aid for limited periods at first, gradually increasing each period of use.
5) "Background noises"—the unwanted sounds of clocks, automobiles, slammed doors, etc.—are sure to be confusing when first heard but later are ignored just as in normal hearing.
6) Like wearing new glasses or a new denture, it takes *time* to get accustomed to a hearing aid.
7) It is important to *listen*—to keep full attention on what the speaker is saying.
8) Any fatigue experienced is usually the result of having lost the listening habit.
9) Even without having had instruction in lip reading, watch the lips of the speaker—let the eyes and the ears work jointly to facilitate rapid understanding.

All new users of a hearing aid should follow a *step-by-step* program. Here is a practical five-step plan that is recommended as a training routine:

FIRST PERIOD

Confine first hearing exercises to home.
Converse with only one person at a time.
Watch the speaker.
Always interrupt if a particular word or sentence is missed.
Acquire the habit of reading aloud. Read slowly, paying attention to diction and modulation. (This is especially helpful in preventing a monotonous or "deaf" voice.)
Listen to *music only* on radio or phonograph. (Adjust radio to *normal* volume.)

SECOND PERIOD

Increase listening distances.
Try small group conversations with two or three people, listening to one at a time.
Continue listening to music—but increase the period.

THIRD PERIOD

Begin short business and social visits.
Adjust the hearing aid carefully for comfortable sound volume. Rest at intervals during visit by shutting off the instrument.
Try listening to short radio speeches.

FOURTH PERIOD

Attend church or lecture.
Preferably sit on the center aisle, not more than 6 or 7 rows from the front.
Experiment to get proper control of volume—it may be more or less than what was needed at home. (Remember poor acoustics or a speaker's poor diction prevents even normal ears from catching every word.)
Continue listening to radio programs.

FIFTH PERIOD

Attend theatre and movies.

Never sit under the balcony. Sit in the center of the orchestra, 4 to 6 rows from the front in the theatre; usually about 8 to 12 rows from the front in the movies.

Here, especially, do not be discouraged if the first results are not all that was hoped for. The stage and screen make hearing difficult because there are always a number of people in motion talking in different pitches and at different speeds. Also the acoustics and the degree of amplification make for difficulties that can be resolved only by patient adjustment and practice.

The above plan will be adequate for most cases of relatively slight or moderate loss which respond rapidly to the use of a hearing aid. There are some, however, whose hearing loss is of such a nature that they never hear well in theatre or auditorium. Their chief problem is to improve understanding of group and single conversations; and for them the following general suggestions should prove helpful.

RADIO

1) Use a radio equipped with hearing aid receivers for both ears.
2) Tune in a few minutes before the desired program starts in order to get the announcement of the program and the station, by word of mouth.
3) Try to distinguish music from speech if possible. Repeat procedure every night for several weeks. Since full concentration is needed to accomplish results, do nothing else during the time of practice.

PHONOGRAPH

1) Use an electrically operated phonograph.
2) Choose records of songs well remembered from childhood.
3) Try to recognize a particular melody by playing a record without looking at its title until after it has been run off. Twenty or thirty repetitions will generally assure correct recognition of the tune as well as improved tone perception.
4) Use records repeating the singing syllables *do, re, mi,* etc., in 2 or 3 octaves and other syllable drills to revive the ear for finer tone nuances.
5) If vowels are not readily differentiated, rhythmic exercises in rhyme and meter are recommended. After repeated practice, test whether you can identify the verse by placing the phonograph needle at random on the face of the record.
6) Turn the volume knob lower as your sound perception improves.

EXERCISES FOR HOME PRACTICE IN EDUCATING YOUR HEARING

Section 1—Get Used To Your Hearing Aid

Throughout the exercises, you should familiarize yourself with the lesson material before you attempt to practise it—whether it be a song, word list, or story. Before several of the exercises it is mentioned that the pupil is to keep the paper before him while the material is read aloud by an assistant. Thus the information gained through the eyes is able to support and supplement what you get through your ears.

The first step is practice in listening to music. Use your hearing aid and, while listening, keep the rhythm.

If a phonograph is available, use records of Sousa's marches as these have the time very plainly marked. Of course any other good march will do.

After these are familiar try records of the Strauss waltzes, especially the *Blue Danube.* Another good waltz is *The Southern Roses.*

Now go on to jazz and swing music or any popular airs.

The next step is to become accustomed to music with words. In order to do this, at first have the words before you while listening so you may follow them on the record. Begin with the simple Mother Goose melodies. Next try any popular songs or familiar hymns.

Let us now go to the radio with our hearing aid. First dial for instrumental music. Next dial for station announcements and get to know these as well as the announcers know them. This will not be as difficult as you may think for you will probably know what to expect.

Talks or speeches should be the last things tried on the radio because the content, expression and even words will be unfamiliar.

At this point, it will be wise to ask help from the members of your family in the use of your audicle so that you may learn to recognize their voices.

Ask each person to say something to you. Never mind trying to know exactly *what* he or she says as the idea is for you to distinguish the difference in voices, as between men, women and children as well as between your friends.

Become accustomed to these various sounds—

The door bell	Slamming of a door
The telephone	Running water
A whistle	Coughing
Laughter	Barking of a dog
Crying	The honk of an auto horn
A sneeze	The shifting of gears

The grinding of brakes

Section 2—Vowel Recognition

Ask someone to act as your assistant, and adjust your audicle to that person's voice, for we are now going to suggest that you do some intensive training for vowel recognition. First, however, we must give—

Rules for the assistant

a. Use your normal speaking voice.
b. Do not speak too rapidly nor too slowly.
c. Tell the pupil what to expect.
d. At first allow pupil to lip read as well as to listen.
e. As soon as possible, have the pupil only listen, not lip read, but never let him feel discouraged and, if many mistakes are made, simply return to lip reading.

EXERCISES

The assistant gives the sound of "o" as in "no" three times, thus—

o, o, o. Pupil repeats same.

Assistant gives the sound of "ah" as the "a" in "father."

ah, ah, ah. Pupil repeats.

Assistant compares the two vowels given, thus—

o ah, o ah. Pupil repeats.

Assistant gives "a" as in "May."

a, a, a. Pupil repeats.

Assistant compares each new vowel with those already given,

in order that the pupil will learn to distinguish the difference in the sounds. Thus—

"o" as in "no." "a" as in "May."
o a, o a. Pupil repeats.
"ah" as in "father." "a" as in "May."
ä ā, ä ā. Pupil repeats.

Assistant gives the sound of "aw" as in "saw."
aw, aw, aw. Pupil repeats.

Assistant compares new sound with those already given—
"o" as in "no." "aw" as in "saw."
o aw, o aw. Pupil repeats.
"ah" as in "father." "aw" as in "saw."
a aw, a aw. Pupil repeats.
"a" as in "May." "aw" as in "saw."
a aw, a aw. Pupil repeats.

Assistant gives the sound of "e" as in "see."
e, e, e. Pupil repeats.

Assistant compares new sound with those already given—
"o" as in "no." "e" as in "see."
o e, o e. Pupil repeats.
"ah" as in "father." "e" as in "see."
a e, a e. Pupil repeats.
"aw" as in "saw." "e" as in "see."
aw e, aw e. Pupil repeats.

Assistant gives the sound of "oo" as in "moon."
oo, oo, oo. Pupil repeats.

Assistant compares new sound with those already given—
"o" as in "no." "oo" as in "moon."
o oo, o oo. Pupil repeats.
"ah" as in "father." "oo" as in "moon."
a oo, a oo. Pupil repeats.
"a" as in "May." "oo" as in "moon."
a oo, a oo. Pupil repeats.
"aw" as in "saw." "oo" as in "moon."
aw oo, aw oo. Pupil repeats.
"e" as in "see." "oo" as in "moon."
e oo, e oo. Pupil repeats.

Assistant gives the sound of "i" as in "ice."
i, i, i. Pupil repeats.

Assistant compares new sound with those already given—
"o" as in "no." "i" as in "ice."
o i, o i. Pupil repeats.
"ah" as in "father." "i" as in "ice."
a i, a i. Pupil repeats.
"a" as in "May." "i" as in "ice."
a i, a i. Pupil repeats.
"aw" as in "saw." "i" as in "ice."
aw i, aw i. Pupil repeats.
"e" as in "see." "i" as in "ice."
e i, e i. Pupil repeats.
"oo" as in "moon." "i" as in "ice."
oo i, oo i. Pupil repeats.

Assistant gives sound of "u" as in "use."
u, u, u. Pupil repeats.

Assistant compares new sound with those already given—
"o" as in "no." "u" as in "use."
o u, o u. Pupil repeats.
"ah" as in "father." "u" as in "use."
a u, a u. Pupil repeats.
"a" as in "May." "u" as in "use."
a u, a u. Pupil repeats
"e" as in "see." "u" as in "use."
e u, e u. Pupil repeats.
"oo" as in "moon." "u" as in "use."
oo u, oo u. Pupil repeats.
"i" as in "ice." "u" as in "use."
i u, i u. Pupil repeats.

Assistant gives sound of "ou" as in "thou."
ou, ou, ou. Pupil repeats.

Assistant compares the sound of "ou" with the sounds already learned—
"o" as in "no." "ou" as in "thou."
o ou, o ou. Pupil repeats.
"ah" as in "father." "ou" as in "thou."
a ou, a ou. Pupil repeats.
"a" as in "May." "ou" as in "thou."
a ou, a ou. Pupil repeats.
"aw" as in "saw." "ou" as in "thou."
aw ou, aw ou. Pupil repeats.
"e" as in "see." "ou" as in "thou."
e ou, e ou. Pupil repeats.
"oo" as in "moon." "ou" as in "thou."
oo ou, oo ou. Pupil repeats.
"u" as in "use." "ou" as in "thou."
u ou, u ou. Pupil repeats.

Assistant gives the sound of "oi" as in "boil."
oi, oi, oi. Pupil repeats.

Compare the sound of "oi" with the sounds already learned—
"o" as in "no." "oi" as in "boil."
o oi, o oi. Pupil repeats.
"ah" as in "father." "oi" as in "boil."
a oi, a oi. Pupil repeats.
"a" as in "May." "oi" as in "boil."
a oi, a oi. Pupil repeats.
"aw" as in "saw." "oi" as in "boil."
aw oi, aw oi. Pupil repeats.
"e" as in "see." "oi" as in "boil."
e oi, e oi. Pupil repeats.
"oo" as in "moon." "oi" as in "boil."
oo oi, oo oi. Pupil repeats.
"i" as in "ice." "oi" as in "boil."
i oi, i oi. Pupil repeats.
"u" as in "use." "oi" as in "boil."
u oi, u oi. Pupil repeats.
"ou" as in "thou." "oi" as in "boil."
ou oi, ou oi. Pupil repeats.

Assistant gives the sound of "o" as in "not."
o, o, o. Pupil repeats.

Compare the sound of "ō" in "nō" with the sound of "ŏ" in "nŏt."
ō ŏ, ō ŏ. Pupil repeats.

Give the sound of short "ă" as in "căt."
ă ă ă. Pupil repeats.

Compare the long sound of "ā" as in "Māy" with the short sound of "ă" as in "căt."
ā ă, ā ă. Pupil repeats.

Give the short sound of "ĕ" as in "mĕt."
ĕ, ĕ, ĕ. Pupil repeats.

Compare the long sound of "ē" as in "sēē" with the short sound of "ĕ" as in "mĕt."
ē ĕ, ē ĕ. Pupil repeats.

Give the sound of short "ĭ" as in "ĭt."
ĭ, ĭ, ĭ. Pupil repeats.

Compare the sound of long "ī" as in "īce" with the sound of short "ĭ" in "ĭt."
ī ĭ, ī ĭ. Pupil repeats.

Give the sound of short "ŭ" as in "ŭp."
ŭ, ŭ, ŭ. Pupil repeats.

Compare the sound of long "u" as in "use" with the sound of short "ŭ" as in "ŭp."
u ŭ, u ŭ. Pupil repeats.

Give the sound of short "o͝o" as in "bo͝ok."
o͝o, o͝o, o͝o. Pupil repeats.

Compare the sound of long "ōō" as in "mōōn" with the sound of short "ŏŏ" as in "bŏŏk."

ōō ŏŏ, ōō ŏŏ. Pupil repeats.

Section 3—Consonants

Now, listen for the sounds of consonants. Please remember you are not to hear the *names* of letters but their *sounds*. For example, you are not to hear "em," but "m-m-m" as in "mother."

m-m-m. Pupil repeats.

Give the sound of "n" as in "nose."

n, n, n. Pupil repeats.

Compare the sounds of m, n, m, n. Pupil repeats.

Give the sound of "k" as in "kind."

k, k, k. Pupil repeats.

Give the sound of "g" as in "go."

g, g, g. Pupil repeats.

Compare the sounds of k, g, k, g. Pupil repeats.

Give the sound of "s" as in "soon."

s, s, s. Pupil repeats.

Give the sound of "z" as in "zeal."

z, z, z. Pupil repeats.

Compare the sounds of s, z, s, z. Pupil repeats.

Give the sound of "p" as in "pail."

p, p, p. Pupil repeats.

Give the sound of "b" as in "bean."

b, b, b. Pupil repeats.

Compare the sounds of p, b, p, b. Pupil repeats.

Give the sound of "t" as in "tan."

t, t, t. Pupil repeats.

Give the sound of "d" as in "day."

d, d, d. Pupil repeats.

Compare the sounds of t, d, t, d. Pupil repeats.

Give the sound of "f" as in "face."

f, f. f. Pupil repeats.

Give the sound of "v" as in "vain."

v, v, v. Pupil repeats.

Compare the sounds of f, v, f, v. Pupil repeats.

Give the breath sound of "th" as in "thin."

th, th, th. Pupil repeats.

Give the voice sound of "th" as in "then."

th, th, th. Pupil repeats.

Compare the two sounds of th, th, th, th. Pupil repeats.

Give the sound of "l" as in "lace."

l, l, l. Pupil repeats.

Say "lah, lah, lah." Pupil repeats.

Give initial "r" as in "right."

r, r, r. Pupil repeats.

Give "ng" as in "ring."

ng, ng, ng. Pupil repeats.

Say "ing, ang, ong, eng, ung." Pupil repeats.

At this point, you can make up combinations of consonants and vowels, after this manner—

bah, bay, bee, boh, boo, bow, boi (boy), bi (buy).

With these same vowel sounds take another consonant as "m," then "f" and "s", etc. Or use different consonants with the same vowel, as—

mah, fah, sah, kah, shah, bah, thah, pah, tah, etc.

If you have a piano, sing the scales. This is good for your voice as well as your ear training.

Section 4—Words and Phrases

The following words contain all the elementary sounds. These directions should be followed in practicing them:

a. Pupil should have the list of words before him and follow as the assistant pronounces the word twice.

b. At first, pupil should lip read as well as hear the word.

c. Then try to understand without looking at the words or lip reading.

boy	doll	spool
top	hat	sheep
cat	man	baby
cow	girl	paper
dog	book	dress
cup	coat	box
pin	boat	chair
fan	fish	woman
shoe	knife	window
ball	slate	door
pool	spoon	floor

Practice listening for numbers—

a. 1 to 10

b. 10 to 100

c. 100 to 1,000 etc.

Practice recognizing people's names—

First names

Full names

Use Mr., Mrs., Miss with names.

Listen for names of cities, towns, streets and names of buildings.

Listen to these phrases—

O.K.	Hurry up	Good morning
All right	What did you say?	Good afternoon
Yes	Please move	Good night
No	Thank you	Good-bye

See how quickly you can understand and answer these questions—

How do you do?
How are you?
Are you feeling better?
What have you been doing?
Is it cold?
Is it warm enough for you?
What is your name?
Where do you live?
Is your home far from here?
Were you born in America?
Where were you born?
When is your birthday?
Have you paid your income tax?
What newspaper do you read?

Section 5—Stories

Select simple episodes from newspapers, magazines and books. Again it is necessary to emphasize the fact that whoever is acting as assistant must use a normal speaking voice. Do not speak too slowly or too rapidly. Do not exaggerate in any way.

It is suggested that you have the story before you while the assistant reads the entire story through once, or as many times as you wish. Then have it read sentence by sentence without following the text, and repeat each sentence after the assistant.

How to Improve Your Speech

It is inevitable that bad hearing is coupled with bad speech. The ear and the mouth, aside from any psychological connection, are two integral parts of the body's communication system—and work in unison for the production of speech from earliest infancy on. The ear is the reception center; the mouth, the sender. And if the individual no longer hears the message he is putting on the air, he cannot judge whether the transmission is faulty.

It is my good fortune that as yet anything I know about speech correction comes from others rather than through my own personal experience. Inasmuch as my hearing loss was slight until my late twenties, I had no speech difficulties in the important formative years. Indeed, as a member of the Harvard debating team and the winner of several oratorical medals, I participated actively in college public speaking events.

In recent years I have done a fair amount of lecturing —and sometimes I fear I am slipping. My peculiar form of deafness makes it difficult for me to gauge the sound of my voice. Consequently, whenever I suspect myself of talking too loud, I lower my voice so perceptibly that others have a hard time following what I say. My wife and I have worked out an arrangement; she sits in the back of the lecture hall; if I begin mumbling, she signals to jerk me up.

Corrective speech offers an opportunity which we who are hard-of-hearing cannot afford to ignore. If we practise faithfully, not only can we overcome our difficulties, but we may also acquire a perfection of tone and diction surpassing that of so-called "normal" individuals. Effective speech is a valuable asset—for everyone, in today's world, who wants to win friends and influence people.

L. B.

It is no exaggeration to say that we live in a world of words. About 75 per cent of all human activities—social and vocational—involve speech. Language is so universal and so necessary a part of our lives that we easily come to regard it as an inborn power—as natural as breathing or eating. Actually, however, it is not an instinctive function but a *learned* process.

Under normal conditions, human beings learn to speak by hearing. (This explains why individuals who are born deaf or become deaf in infancy are also mute, though in most cases they have perfectly efficient vocal mechanisms; not having heard sufficiently, they have no concept of sound and hence do not learn to speak.) In cases of hearing loss, the individual continues practising speech; but because he does not hear speech sounds accurately, he slips into the habit of practising the wrong ones and soon develops handicapping speech mannerisms.

To improve speech it is necessary not only to train the muscles of tongue, lips and the other associated organs, but also to educate the hearing to a finer appreciation and discrimination of speech sounds. This type of ear training improves voice and diction—and at the same time actually *conserves* residual hearing by necessitating closer attention to sounds.

The human voice is an extremely versatile apparatus. It can produce numerous tonal effects, minute variations of sound and wide ranges of resonance. Because of its flexibility, we can sing, hum, laugh, groan, whistle, shout, and make the sounds of language both separately and in an almost infinite number of combinations.

The source of all oral expression is the flow of air from the *lungs*. Situated as they are in the chest cavity, the lungs are supplied with air through the windpipe (referred to in anatomy textbooks as the *trachea*), the rate and regularity of breath being controlled by the muscles of the diaphragm and ribs. Atop the windpipe and behind the Adam's apple is a complex muscle-bone-cartilage structure called the voice box or *larynx* (best known when it becomes inflamed and we suffer from laryngitis or "hoarse sore throat"). The larynx contains a pair of muscle bands—the *vocal cords*—which vibrate when the breath is forced out through the small opening between them. The vibrations of the vocal cords affect the flow of air from the lungs, breaking it up into minute puffs which produce in the atmosphere pulses we perceive as sound. Stretching or slackening the vocal cords changes the pitch of the voice; that is, high or low tones are produced much in the same way as when a taut or loose banjo string is plucked.

This process of sound-generation in the larynx is termed *phonation*. But fortunately there is more to the speech mechanism than what we have thus far described; otherwise we could merely sing without being able to use spoken language. To produce recognizable speech sounds, modifications must be imposed on the breath stream by the tongue, soft palate, hard palate, lips, teeth and the walls of the throat, nose and mouth. And the changes effected by these highly adjustable parts is known as *articulation*.

Other elements contributing to the final sound of the voice are the sinuses and the hollow passages of the throat, nose and mouth. Without these resonating chambers, the voice would lack depth, color and character.

In many ways, the voice apparatus resembles a musical instrument. A musician playing a trumpet, for instance, forces breath between his lips which are pressed against the mouthpiece; moving air causes his lips to vibrate; the vibrations produce a tone which is amplified and given color by the form and material of the instrument. By altering the shape of his lips, the musician can play notes of different pitch. Thus the analogy between trumpet and voice becomes clear: the player's lips are comparable to the vibrating vocal cords; the trumpet tube serves the same purpose as the upper throat and mouth; the bell-mouth, as the mouth and nasal chambers through which vocal sound is delivered into the atmosphere; and hand, hat or fibre cone placed over the bell of the instrument

"mutes" sound just as soft palate, tongue and lips are employed as mutes in the production of speech.

In order to study speech sounds, we must first know their various classifications. First, they may be divided according to whether or not their production requires the vocal cords to be vibrated:

VOICELESS (no vibration)	VOICED (vibration)
p	b
t	d
k	g
th (as in think)	th (as in thou)
s	z
sh	zh
f	v

The second consideration revolves around the *muting* by tongue and lips of sounds produced by vibration of the vocal cords. This affects r, l, m, n, ng, w and y—and gives rise to their classification as both *vocalized* consonants and *muted* vowels. A third difference separates sounds into *continuant* or *stopped* ("exploded"): the former comprise all the vowels and some consonants that can be maintained without distortion, like s, and the latter are consonants which cannot be prolonged, like t.

The character of vowel sounds is governed chiefly by the size and shape of the resonating chamber—the muscular tube formed by the throat and mouth. The slight and delicately related muscle movements necessary to form a resonating chamber of the proper shape are an automatic reaction which is established by hearing. In other words, desired quality, pitch and volume in the human voice are the result of automatic responses of the vocal muscles to a preconceived tonal image in the brain. The tone which the individual wishes to produce is *heard mentally* before it is given out by the voice. Thus, a hearing disability is frequently accompanied by deterioration of vocal quality.

Although this is true of consonants as well as vowels, it is especially important in the case of vowel production. The latter depends much more on the shape of the resonating chamber than on the tongue, lip and jaw positions which may be learned by visual observation.

Vowels can best be taught by constantly appealing to the ear as a gauge of vocal performance. It follows, therefore, that a hard-of-hearing person who has obtained a hearing aid compensating for his loss is at a distinct advantage in speech improvement work. He can thus use the same approach as the person with unimpaired hearing. And experimentation has shown that correct vowel pronunciation is best acquired by learning to *listen carefully* to the proper sound and then repeatedly *trying* to imitate it.

In contrast to vowel production, the articulation of consonants involves a muscular routine which can be *felt*. Correction of consonantal difficulties is mainly a matter of discovering muscular errors and retraining the muscles of articulation.

Speech correctionists base any program of consonant improvement on what they term the "three p's: *phonation, pressure* and *position*. Adequate phonation requires special attention to the contrasts between voiced and voiceless, continuant and stopped consonants. The second factor in establishing speech quality is the control of air pressure at the point of articulation, determined by resistance of the tongue or lips to the air stream. To assure the proper position of tongue, jaws and lips during speech, correct placement employs various senses: 1) *sight*—look at your mouth in a hand mirror; 2) *touch*—consciously *feel* the physical contact of the teeth upon lips, tongue against roof of mouth, etc.; 3) *hearing*—learn the sound that results from correct position and try to duplicate it.

Any effective method of establishing new habits of speech depends upon active attention, regular practice at spaced intervals, patience and determination to "stay with" the speech improvement program. The following exercises are planned to begin with consonantal sounds which can be seen in a hand mirror during production. Thus, while you are making the most of your residual hearing in learning the sound, you have a constant check on your performance through vision. Consonantal sounds that cannot be seen are next given. Here you must depend upon your knowledge of the speech mechanism and of the classification of sounds, together with the senses of feeling and position, in order to link the production of these sounds with your hearing. Finally, vowels and intonation drills are presented for your consideration.

Whether working under supervision or alone, you should always have a clear conception of the *way the sound is produced* before attempting its production. Reading at a slow rate is important. The method for practising the drills, described in the first few exercises, should of course be used with all of them.

EXERCISES FOR HOME PRACTICE IN SPEECH IMPROVEMENT

Section I—Consonant Exercises

Practice on each consonant exercise by making up sentences which contain the words and sounds listed.

b, as in bad, baby, cob.

This sound appears in the beginning, in the middle, and at the end of words in English. It is made by exploding sound between the lips. It is a stopped sound—that is, it cannot be prolonged without changing its identity. Make sure that the vocal bands vibrate during the production of the sound. (Pinch the Adam's apple lightly with the thumb and forefinger as a test while you say *b*). Repeat *b* six times, stopping long enough after each production to listen attentively for any sound effects that you may be able to catch. Be certain to make the sound *b* and not pronounce *bee*. Look into the mirror while producing *b* to make sure that the lips are exploding.

Read the following words first in vertical columns, then in horizontal line, *always slowly and with an interval after each word for active attention to listening for the sound effects.*

bay	zebra	sub
Bill	abstract	baby
bail	fibre	babble
beam	cab	Beebe
burst	tub	bombastic
abbey	Abe	bible
cobra	ebb	bubble

p, as in pay, paper, nap.

This sound appears in the beginning, in the middle, and at the end of words in English. It is a cognate of *b*—that is, it is articulated like *b* except that it is unvocalized—the vocal bands do not vibrate during its production.

Repeat *p* six times. Be certain to say *p* and not *pee*. Look into the mirror while producing *p* to make sure that the lips are exploding. Hold a piece of writing paper three or four inches from the lips and notice how it is blown away when *p* is produced correctly.

Read the following words as you did in the *b* drill.

pay	tipsy	sup
pill	lapse	paper
pail	supper	proper
peal	cap	pepper
purse	mop	piper
happy	ape	papa
copy	up	puppy

Read the following words making clear (and, at first, exaggerated distinctions between *b* and *p*.

bay-pay	symbol-simple	tribe-tripe
pay-bay	simple-symbol	biped
buy-pie	crumble-crumple	pabulum
pie-buy	nap-nab	bumper
bill-pill	nap-nab	public
amble-ample	cob-cop	puberty
ample-amble	cop-cob	blimp

v, as in very, rivet, save.

This sound appears in the beginning, in the middle, and at the end of words in English. It is produced by lightly touching the lower lip with the upper front teeth while expelling vocalization. It is described as a continuant, vocalized consonant, and is a cognate of *f*.

Repeat *v* six times. Prolong each repetition of the sound. Look into the mirror during the repetitions and apply the test to make sure that the vocal bands are vibrating during the repetitions.

Then read the following words as you did in the preceding drills.

vary	woven	trove
vocal	avaricious	vivacious
very	rivet	revolve
voice	wave	bi-valve
verse	weave	vivacity
avid	move	evolve
privet	cove	verve

f, as in fairy, *ph*ilosophy, muffler, safe.

This sound appears in the beginning, in the middle, and at the end of words in English. It is produced like its cognate, *v*, except that breath instead of vocalization is expelled.

Repeat *f* six times. Prolong each repetition of the sound. Look into the mirror and apply the test to make sure that the vocal bands are *not* vibrating during the repetitions.

Next read the following words as you have done with the others.

fairy	muffle	whiff
focal	mufti	fife
feign	stifle	feof
few	waif	fanciful
fine	strife	faithful
a*ph*id	huff	fanfare
pro*ph*esy	cuff	fateful

Then read the following pairs of words making clear distinction between *v* and *f*.

very-fairy	first-verse	waiver-wafer
fairy-very	vile-file	wafer-waiver
vocal-focal	file-vile	beaver-beefer
focal-vocal	avid-a*ph*id	beefer-beaver
vine-fine	a*ph*id-avid	shovel-shuffle
fine-vine	waves-waifs	shuffle-shovel
verse-first	waifs-waves	

w, as in water and away.

This sound appears in the beginning and in the middle of words in English. It is not pronounced when it appears at the end of English words. It is a continuant made by rounding the lips and passing vocalization through the opening.

Read the following words as you have done with the other drills.

water	away	walking
wish	mower	worst
wail	wigwam	wet
wig	aware	inward
wash	beware	rowing
woods	our	overpowering
weigh	power	

Some people with lowered hearing fall into the habit of substituting the sound of *v* for *w*, and vice versa. Consequently, it is helpful to become conscious of the differences in their production by reading contrasting words like the following:

weal-veal	verily-warily	wane-vein
veal-weal	warily-verily	vein-wane
wick-Vic	vow-wow	went-vent
Vic-wick	wow-vow	vent-went
Willa-villa	wicker-vicar	
villa-Willa	vicar-wicker	

m, as in may, amen, ham,
appears in the beginning, in the middle, and at the end of words in English. It is a continuant, vocalized sound made by pressing the lips together and allowing the vocalization to escape through the nostrils. Prolong the sound of *m*, and alternately close and open the nostrils, using the thumb and forefinger. It will be noticed that the sound cannot be made when the nostrils are closed.

Say *m* six times, making certain that adequate vocalization accompanies each production. (When *m* is vigorously articulated, the person can feel the vibration of the sound in the face.) Then read the following words.

might	female	dream
milk	swamp	lame
male	smith	millennium
mist	smooth	maximum
moat	limpid	Mamie
Mary	aim	miasma
make	trim	maim
llama	him	Mormon
amen	Tim	murmur

When any of the three nasalized sounds in English (m, n, ng as in hang) are improperly produced, a speech defect results known as *denasalization*. Because many hypacusics do not hear nasal resonation, their voices are marked by denasalization. *Therefore, do not be afraid to exaggerate somewhat the resonance of the three nasalized sounds.*

In extreme cases of denasalization *m* closely resembles *b*. Make sure, when reading the following word pairs and sentences, that you distinguish between the exploded quality of *b* and the nasal resonance of *m*. Remember that both sounds are vocalized and that they both make use of the lips.

my-by	bike-Mike	baby-Mamie
by-my	Mike-bike	Mamie-baby
mile-bile	bottle-mottle	babble-mammal
bile-mile	mottle-bottle	mammal-babble
monk-bunk	tab-tam	boat-moat
bunk-monk	tam-tab	moat-boat

ng, as in singer, hang,
appears in the middle and at the end of words in English. It is a nasalized sound made by arching the tongue so that the back part of it touches the soft palate thus directing the vocalization through the nasal passages. It is a continuant sound. Produce *ng* six times at a slow rate and make certain that no exploded *k* or *g* sound is added to the production. Then read the words and sentences that follow.

singer	hang	swinging
hanger	bung	longing
twanger	long	singing
tungsten	sang	orangoutang
stronghold	bring	longingly

n, as in no, Anne, man,
appears in the beginning, in the middle, and at the end of words in English. It is produced by pressing the front of the tongue against the hard palate and directing vocalization through the nasal passages. It is a continuant, vocalized sound.

Produce the sound of *n* six times with the mouth open so that you can see the correct position of the tongue. Then repeat the productions with the mouth closed, retaining the memory of the correct tongue position, Make sure that adequate vocalization accompanies the production. Then read the following words in the usual way.

now	interior	boon
no	manifold	notch
nose	Minerva	noose
night	never	attention
many	knowledge	pinion
nice	Finn	onion
kneel	education	interne

th, as in thin, mathematics, kith,
appears in the beginning, in the middle, and at the end of words in English. It is a voiceless, continuant sound made by projecting the tip of the tongue between the teeth and forcing breath over it.

Using the mirror, produce the sound six times and make sure that vigorous breath is expelled by holding the hand close to the lips as a check. Then read the words and sentences in the customary way.

thing	Hathaway	mouth
thought	mathematics	tooth
throw	pithy	kith
through	smithy	troth
thrust	swarthy	pith

th, as in thou, without, soothe,
appears in the beginning, in the middle, and at the end of words in English. It is a cognate of *th* as in thin, that is, it is produced like *th* as in thin, except that it is vocalized. Read the following sentences and words in the usual way.

that	father	wreathe
this	mother	teethe
those	heathen	soothe
these	farther	swathe
thou	further	bathe

Never substitute the cognates *th* (as in thin) and *th* (as in thou) for each other. Read the following word pairs emphasizing the difference between the voiceless and voiced *th* sounds. (The italicized *th* sounds are voiced; the other th sounds are voiceless.)

mouth-mou*th*e	booth-boo*th*s	path-pa*th*s
swath-swa*th*e	bath-ba*th*e	wreath-wrea*th*e
teeth-tee*th*e	breath-brea*th*e	moth-mo*th*s

s, as in so, massive, toss,
appears in the beginning, in the middle, and at the end of words in English. It is a voiceless, continuant sound made by forcing breath through a central groove of the tongue which cleaves to the roof of the mouth. The breath escapes over the tip of the tongue and is directed against the front teeth. It is the sharpest or highest frequency sound in the language.

sew	tassel	passing
same	loosely	rasping
scene	mister	statistics
soot	posting	merciless
situation	pass	sassafras

z, as in zeal, breeze, poison, toes, etc.,
appears in the beginning, in the middle, and at the end of words in English. It is a continuant and, as the cognate of *s*, is produced like the latter except that it is voiced.

zephyr	enzyme	sneeze
zinc	ozone	tree*s*
zenith	breezy	disease
zoo	hawser	clay*s*

sh, as in shame, mo*ti*on, hash,
appears in the beginning, in the middle, and at the end of words in English. It is a voiceless, continuant sound made by emitting breath pressure through a wider opening than for the *s* production and usually accompanied by protruding lips to direct the breath emission. When the sound is produced properly the breath pressure is great enough to be felt on the back of the hand if held close to, but not touching, the lips.

shoot	cushion	plush
she	pas*si*on	hashish
shoat	lo*ti*on	showmanship
ship	swish	Mi*ch*igan
shoe	push	wishwash
emo*ti*on	splash	shoeshine
lus*ci*ous	fish	hush-hush

zh, as in azure, garage,
appears most frequently in the middle of words in English. It also occurs at the end of words borrowed from other languages, but these are relatively rare. It is a cognate of *sh*, produced in the same way except for the addition of vocalization.

measure	azure	garage
leisure	treasure	mirage
pleasure	casual	ta*j*

seizure	usury	massage
usual	Persia	loge

t, as in time, little, hat,
appears in the beginning, in the middle, and at the end of words in English. It is an unvocalized, exploded sound made by touching the tip of the tongue against the gum ridges above the upper front teeth as breath is expelled.

tick	titanic	albeit
tiara	tide	begot
italics	tame	forest
history	tea	titillate
fat	extort	potato
apart	distend	latitude
tatter	extinct	tomato

d, as in dog, adder, toad,
appears in the beginning, in the middle, and at the end of words in English. It is a cognate of *t,* that is *d* is articulated like *t* except vocalization is added.

day	kidnap	sod
dairy	spider	doodle
damp	reminder	dedicate
dance	end	dodder
deem	wad	daddy
middle	head	deduce
hideout	had	dander

ch, as in chair, Massachusetts, hatch,
appears in the beginning, in the middle, and at the end of words in English. It is a composite sound made by producing *t* and *sh* almost simultaneously. It is a non-continuant, voiceless sound.

chain	handkerchief	latch
chase	discharge	much
charm	pitcher	crouch
charity	poacher	hunch
cheese	urchin	screech

j (or *g* as in George) as in join, adjourn, sludge,
appears in the beginning, in the middle, and the end of words in English. It is the vocalized cognate of *ch* made by producing *d* plus *zh* almost simultaneously.

join	bulg*ing*	fu*dge*
jam	rag*ing*	ca*ge*
jelly	sagebrush	he*dge*
jockey	tangent	hi*nge*
jack	plunger	knowle*dge*

k, as in curtain, tractor, hack,
appears in the beginning, in the middle, and at the end of words in English. It is a stopped, voiceless sound made by raising the back of the tongue to touch the soft palate and releasing breath pressure explosively by dropping the back of the tongue.

*c*oy	package	quack
*c*ause	taker	*c*olic
keg	fakir	kick
keen	pack	kodak
*c*avern	tuck	*c*ricket
rookey	back	*c*rack
poker	sneak	*c*reak

g, as in go, dragging, rug,
appears at the beginning, in the middle, and at the end of words in English. It is a cognate of *k.* Hence, it is articulated in the same manner as *k* except that voice is added.

gale	cognomen	rig
go	struggle	goggle
game	lugged	giggle
gear	plug	gig
gaiters	cog	glug
aggrandize	mug	gag
muggy	pig	groggy

y, as in yellow, canyon, mill*i*on,
appears at the beginning and in the middle of words in English. It is a continuant and voiced sound made by raising the back of the tongue against the soft palate. It is sometimes described as a muted vowel.

yacht	young	carnel*i*an
year	banyan	mill*i*on
yard	min*i*on	Cornelia

r, as in ripe, abbreviate, maker,
appears at the beginning, in the middle, and at the end of words in English. When it appears at the end of words it is not as strongly enunciated as when it appears in the other two positions. It is a continuant, voiced sound made by raising the entire tongue so that the sides of the tongue touch the side teeth, and the tip almost, but not quite, touches the gums.

righteous	ground	fur
rich	thrust	reindeer
rascal	brown	rooster
roast	mother	reader
reel	father	straggler
approve	brother	grandeur
around	mayor	marker

h, as in how, rehearsal,
appears at the beginning and in the middle of words in English. It is not articulated; it is simply breath allowed to escape vigorously from the mouth. It is voiceless and continuant.

hag	ahoy	hard-hearted
hail	unhappy	hothouse
halter	beholden	heigh-ho
heap	behind	hip-hip-hooray
heat	perhaps	Happy Hooligan

wh, as in what, bobwhite,
appears at the beginning and in the middle of words in English. It is a composite sound produced by combining the *h* and *w* sounds. Review previously given drills for *w.*

whine	horsewhip
when	somewhat
whack	meanwhile
white	millwheel
whistle	overwhelm

Practise on each vowel exercise by making up sentences which contain the words and sounds listed.

Vowels are unobstructed speech sounds differentiated by varying the shape and size of the speech resonators. In learning the characteristic muscular adjustments which accompany (but do not themselves produce) vowel sounds, we should remember that these adjustments center in the lips and tongue. Notice, for example, that the vowel sound as in *she* demands that the lips be spread, whereas the lips are rounded in the production of *u* as in prune. Furthermore, when the lips are tense the tongue is likely to be similarly tensed. Each of the standard vowels is described below together with exercises arranged like those for the consonants.

Practise them in the same way you did the consonant exercises.

The vowel sound as in alm, father, charm,
is produced with the lips parted and the mouth opened widely. The tip of the tongue rests against the lower front teeth. The entire tongue is practically flat with the exception of the middle portion which is slightly raised. The tongue and lips are relaxed for this sound. (Because the letter *a* represents a number of vowel sounds, the sound here described is put in italics. Remember to use your dictionary!)

*a*lm	f*a*ther	p*a*rson
c*a*lm	b*a*lm	p*a*pa
*a*rk	p*a*rk	m*a*ma
*a*rdent	he*a*rth	s*e*rgeant

The vowel sound as in cat, attic,
is produced with the lips and tongue lax. The front and top of the tongue are raised to about a middle position in the mouth.

l*a*mb	*a*m	p*a*nh*a*ndle
h*a*tr*a*ck	p*a*ckage	ph*a*nt*a*stic
s*a*ssaf*r*as	s*a*crilegious	cr*a*ss
perh*a*ps	j*a*m	h*a*m

The vowel sound as in meat, beet, relieve,
is produced by spreading the lips slightly as in smiling. The tip of the tongue rests against the lower front teeth, and the front of the tongue is arched in the direction of the hard palate. Like the lips, the tongue is tense.

*ea*gle	d*ee*p	kn*ee*
*e*vening	s*ee*k	tr*ee*
*ea*ch	dec*ei*ve	spr*ee*
*ea*se	l*ea*k	m*e*

The vowel sound as in it, quick,
is produced with the lips and tongue in the same positions as in the production of the vowel as in *eat* except that they are lax and not tense.

*i*t	ab*i*l*i*ty	d*i*sm*i*ss
*i*d*i*om	sw*i*ft	*i*mp
*i*ll	qu*i*ckw*i*tted	h*i*ss
b*i*t	*i*mprob*a*b*i*l*i*ty	fac*i*l*i*ty

The vowel sound as in fed, bread, many,
is produced by separating the lips without making them tense. The tip of the tongue touches the lower teeth and the front of the tongue rises toward the hard palate but not so high nor so far forward as for the vowel as in *eat*.

*e*lse	*e*difice	d*ea*th
*e*legance	b*e*t	m*a*ny
*e*minence	b*e*tter	br*e*thren

The vowel sound as in make, hail, suede,
is a diphthong—that is, it is composed of two vowel sounds that are combined, with the stress placed on the first. The two vowels that comprise this diphthong are *e* as in *elk* and *e* as in *eel*. Consequently, when the diphthong is produced the lips and tongue assume the positions of the two component vowels that have already been described.

*a*te	b*ai*t	m*ay*
*a*le	f*a*te	d*ay*
*a*ce	p*a*ce	g*ay*
*a*corn	s*ai*l	l*ay*

The vowel sound as in ball, cawl,
is made by opening the lips, but not so widely as for the vowel in *father*. The corners of the rounded lips are drawn together, and the tongue is retracted, the highest point slightly farther back than for the vowel as in *father*.

*ou*ght	*au*dible	g*au*dy
*au*ra	spr*aw*l	h*aw*ser
*au*ction	m*aw*kish	b*ough*t

The vowel sound as in food, flue,
is made by rounding the lips tensely and raising the back of the tongue toward the soft palate.

*oo*ze	l*u*nar	st*oo*l
*oo*long	f*oo*ls	j*u*nior
*uh*lan	t*oo*ls	prudent

The vowel sound as in foot, should, bull,
is made like the vowel in *food* except the tongue is slightly lowered and the lips and tongue are lax.

c*oo*k	P*u*ss	r*oo*kery
h*oo*d	p*u*lpit	w*o*man
b*oo*k	P*u*llman	crook

The vowel sound as in up, cut,
is made by slightly opening the lips and drawing the corners of them together. The tip of the tongue is placed against the lower teeth, and the highest point of the tongue is slightlly higher and more retracted than in the production of the vowel sound as in *father*. The lips and tongue are lax.

*u*pper	c*u*ff	c*u*lminate
*u*pright	c*u*p	r*u*ng
m*u*mps	pl*u*ck	rudder

The unaccented vowel as in bargain, above, student,
is the most frequently used vowel in the language. It never occurs in an accented syllable. Its stressed form is the vowel sound as in *up*. The unaccented vowel is produced like the vowel in *up* except that the lips and tongue are less tense.

thermom*e*t*e*r	gard*e*n	moth*e*r
frig*i*d	person*a*l	caus*e*s
alm*o*nd	reas*o*n	br*o*ther

The vowel sound as in boat, show, sew,
is produced by rounding the lips and drawing back the whole tongue. The back of the tongue is raised toward the soft palate, but not so far back as for the vowel sound as in *food*. The tongue and lips are tense.

*o*at	m*o*st	swall*ow*
*o*de	m*o*te	manifest*o*
*o*pen	wr*o*te	pian*o*
*o*ak	s*o*lar	mell*ow*

The vowel sound as in lie, pry, light,
is a diphthong composed of the vowel as in *calm* and the vowel sound as in *fit*. In producing the diphthong, therefore, follow the directions given for its two component parts.

I	b*uy*	pl*i*ght
*i*ce	d*ie*	r*i*ce
t*i*ght	*i*dle	s*i*gh
ind*i*ct	*i*sland	h*i*gh

The vowel sound as in out, fowl,
is a diphthong composed of the vowel sound as in *calm* and the vowel sound as in *book*. In producing the diphthong therefore, follow the directions given for its two component parts.

*ow*l	p*ow*er	haym*ow*
*ou*t	t*ow*n	p*ow*-w*ow*
*ou*nce	r*ou*nd	b*ough*
*ou*ch	fl*ou*r	all*ow*

The vowel sound as in oil, gargoyle,
is a diphthong composed of the vowel sound as in *all* and the vowel sound as in *ill*. In producing the diphthong, therefore, follow directions given for its two component parts.

*oi*l	sp*oi*l	t*oy*
*oi*ntment	b*oi*l	all*oy*
*oy*er	c*oi*l	cl*oy*
*oy*ster	d*oi*ly	j*oy*

The vowel sound as in music
is a diphthong composed of the muted vowel as in *yes* and the vowel as in *food*. In producing the diphthong, therefore, follow the directions given for its component parts.

*u*se	m*u*sic	f*ew*
*u*tility	d*u*bious	p*ew*
*u*nity	f*u*me	m*ew*
*u*nion	f*u*sion	c*ue*

Section III—Inflectional Exercises

The inflection of the voice prevents it from becoming monotonous and is very important in expressing moods. Inflection gives life and meaning to oral expression. The voices that we like have graceful and meaningful inflections. People wth reduced hearing need to pay a great deal of attention to inflection, because one of the commonest effects of deafness on speech is a monotonous, lacklustre, lifeless voice.

The range of the human voice is known as its gamut, and every person should strive to use a gamut of at least four or five tones. First of all, the beginner should find the most comfortable pitch for his voice. This tone frequently is found to be close to middle C on the piano keyboard. After finding this "comfortable" pitch, he should read many of the above words and sentences (both in the consonant and vowel exercises and drills) on this tone. By doing this, he is establishing his medium voice on a monotone.

After establishing this monotone (not a sing-song or recurrent pattern of tones) he is ready to read words with the *up break*. The up break is the upward change of pitch on a vowel. That is, the vowel is initiated on the monotone and ends on a tone higher. Do not be afraid to exaggerate at first. Read the following words with the up break:

man	go	head
it	eat	fat
do	bait	toot
sew	up	oil

Now, reverse the process by initiating the vowel on the monotone and ending it a tone lower. This, we shall call the *down break*. Read the following words on the down break:

out	turn	feet
ode	bill	few
eel	him	boot
ate	tall	prune

We are now ready for some more intricate patterns of inflection. Try the line, "Fe, fie, fo, fum," beginning high in the gamut and on each succeeding word lowering the voice one tone. In like manner, try the next line, "I smell the blood of an Englishman." Recite other nursery rhymes and favorite bits, from high tone to low tone, and vice versa. A piano can be used to give you the tone pattern at first, then repeat the lines in the same sequence of tones without the piano.

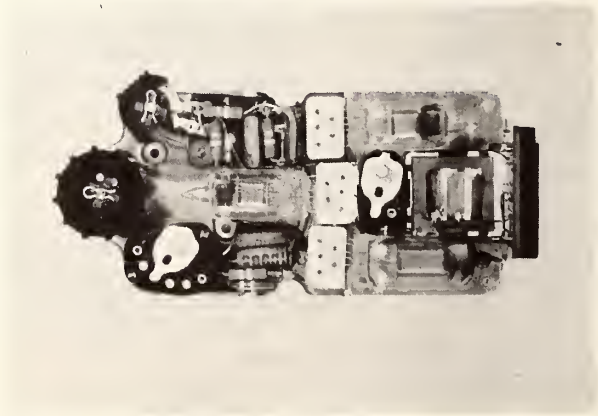
Another means of varying the voice and emphasizing meaning is attained by increasing the loudness of the voice. Notice how the meaning of the following statement changes by varying the loudness on different words. Read the statements in a monotone and at a constant degree of loudness except for the italicized word which you should exaggerate by increasing its loudness.

The teacher said that she would send the boy *home*.
The teacher said that she would send the *boy* home.
The teacher said that she would *send* the boy home.
The teacher said that she *would* send the boy home.
The teacher said that *she* would send the boy home.
The teacher *said* that she would send the boy home.
The *teacher* said that she would send the boy home.

Compose other statements and practise them in like manner.

Yet another way to break vocal monotony is by the use of pause. Pauses (1) give the speaker an opportunity to renew his breath and to gather his thoughts and words; (2) permit the listener to digest the words that precede the pause; (3) present the component thoughts of a long sentence logically. For example, the statement: "As—the boy ran—down—the drive he—saw an—auto going at—about twenty-five miles an hour crash—into the stone—wall," is not so meaningful as when the pauses are placed thus, "As the boy—ran down the drive—he saw an auto—going at about twenty-five miles an hour—crash into the stone wall." The first reading gives us a sample of incorrect phrasing whereas the second shows improved phrasing.

When the pause represents an incomplete thought, the word that precedes the pause usually is read with the up break. When the last word of a group marks the end of a thought it is usually read with the down break.



Interior of a Modern Vacuum Tube Hearing Aid

PART THREE

If we suddenly found ourselves uprooted and set down in some foreign country, knowing that we were destined to spend the rest of our days there, we would most certainly try to familiarize ourselves with the new surroundings. We would realize the necessity of gathering up a fresh circle of friends, of establishing contacts that might lead to jobs, of finding educational centers to give us new skills. Yet pathetically enough, the partially deafened—whose lives are constantly uprooted just as drastically as though they had been physically transported overseas—too often refuse to take the first obvious steps to help themselves. As I have repeatedly emphasized in earlier chapters, they appear willfully ignorant on the subject of their handicap . . . they seem determined to withdraw from human contacts and to become hermits.

To counterbalance such anti-social tendencies, everyone with an acoustic defect should become a member of the American Society for the Hard of Hearing. The dues are only $2 annually, including a subscription to *Hearing News*. The ASHH—founded in 1919—now includes 119 chapters in the United States and Canada. Functioning as a combination club, school, and employment bureau, it offers a unique assortment of social, educational, and vocational services.

Yet despite all its good works, the ASHH has a relatively slim membership. Many critics believe that Leagues for the Hard of Hearing, while helpful in educational activities and working for progressive legislation, are of quite limited usefulness. They conclude that the premise on which the organization is based is not valid . . . that the common denominator is small as compared with the difference in the members' interests. In other words, they do not conceive that a Democrat and a Republican, an Episcopalian and a Jew, a ditchdigger and a college professor, are going to feel enough sense of kinship to join an organization founded on their physical failing.

In a very restricted sense, the critics may have a point. Nevertheless, their attitude appears snobbish and unrealistic. Certainly I have yet to meet anyone—regardless of race, religion, or politics—who could not in some way, benefit himself by association with others sharing his affliction.

If you are fortunate enough to be rich in cash and friendships, busy enough with your job or profession to lack time or inclination for outside activities, then you are indeed self-sufficient. Even so, you cannot deny others less blessed than yourself the right to enjoy these opportunities. Even if you personally have no need of the ASHH, you can at least support it with your money and influence—and thus enlarge its capacity for service.

I would also suggest, as a joint privilege and duty, a membership in the American Association to Promote the Teaching of Speech to the Deaf—founded and endowed in 1890 by Alexander Graham Bell. Here also the dues are $2, including a subscription to *The Volta Review*, a conspicuously well edited journal which serves to keep its readers up to the minute on every phase of the world of sound. The AAPTSD works in the interest of both the deaf and the hard-of-hearing, and conducts a correspondence club for parents of deaf children.

Laura Stovel, Director of ASHH Information Service, has contributed the following chapter, which admirably summarizes what the ASHH has already accomplished—and what it envisions for the future—to enable the partially deafened to participate fully in the essential activities of life.

L. B.

The American Society for the Hard of Hearing and Its Chapters

BY LAURA STOVEL, *Director, Information Service*

To turn financial liabilities into assets is an achievement of which a business man may well be proud. To convert a hearing loss into mental and spiritual gains is a far greater victory, because the liabilities involve the intangibles of life. No other physical or sensory loss shuts one off from his fellowmen as does impairment of hearing. It precludes the myriad casual contacts which give color and interest to daily living. Table talk, light banter, the low-voiced confidences of friends, children's spontaneous outbursts in high trebles which do not penetrate dull ears—these are just a few of the daily incidents of life which the hard-of-hearing miss. Little by little they withdraw from contacts that are embarrassing or painful. They pile one liability on top of another. But there is a formula which, if followed, will convert failure into victory. It has been demonstrated in thousands of cases. It will work for you, just as it has worked for so many others.

The first step is to join a Society for the Hard of Hearing. Stand up before a mirror, look yourself straight in the eye, and say, "Yes, my hearing is bad and getting worse. I've tried to fool myself and everyone else about it. I've pretended that I could hear when I knew I couldn't. But after all, I'm an intelligent person and an honest one. I will not go through life as a sham. This very day I will go to the Society and identify myself with a group of people who are honestly and courageously facing life and learning how to meet it." That will be your first and greatest victory.

Such a Society represents the essence of democracy, for it is a cross-section of the community. Old and young, rich and poor meet on a common plane. Their objective is to rebuild the broken lines of communication, and in so doing to re-establish easy contacts in social and business life. In attaining their objective, they acquire a host of valuable by-products.

No one else will be so patient with your inability to hear as someone who has experienced the same difficulty. Soldiers going through a campaign together become "buddies." The same spirit of comradeship will be found in a Society for the Hard of Hearing.

You and the other members will join in the study

and practice of lip reading, and you will have the satisfaction of acquiring a new skill. Learning lip reading is like learning a new language. It calls for patience and perseverance. While you are exercising those good old-fashioned virtues, you are unconsciously building up your morale. Someday you will understand what a tradesman or a friend says, or you may "overhear" something on the street-car or bus and you will almost be convinced that you actually heard. Your spirits will soar. But don't expect smooth sailing from that day on, for you will find rocks and reefs to avoid. Words that look alike on the lips, men and women who talk with cigarettes in their mouths, people whose lips are not mobile or those who cover their mouths with their hands—these are difficulties past which you must learn to steer.

You will have plenty of fun at the lip reading classes, for teachers always have some good stories to tell. But the best thing you will carry away with you is a changed facial expression. That strained look in the eyes, that pucker in the brow will be eased out without benefit of physical massage.

At the Society you will doubtless find a group hearing aid. For the benefit of all those who have usable hearing left, business meetings and entertainments will be held, by means of this modern, scientific amplification of sound. You will put on an earphone attached to a headband and enjoy the speaking, music, or whatever form of entertainment has been planned.

Because you are on a par with everyone else in the Society, you will take part in the business meetings and learn to speak into the microphone like a practiced radio commentator. Those who, through long years of reticence, have refrained from taking part in open meetings will find themselves active participants once more. A thousand stories could be told of persons who have regained, or perhaps cultivated for the first time at a Society for the Hard of Hearing, the self-confidence that permits them to speak at other public meetings.

After experiencing the joy of easy hearing through a group aid, the next step will be to secure an individual, wearable device. At the Society you will find a list of instruments available for purchase, which have been investigated and accepted by the Council on Physical Medicine of the American Medical Association. Perhaps the Society in your city has a Hearing Aid Service where these accepted devices may be tried out and compared.

Of course, the very first step to take before even considering the purchase of a hearing aid, is a visit to an ear specialist. Let him examine your ears to make certain that there is no impacted wax or a suppuration that should first be cleared up. He is the one, too, who should tell you whether you can hear better through a bone-conduction oscillator placed on the bone in back of the ear or through a receiver and moulded ear-piece, fitted to the external ear to carry the air-borne waves directly to the ear drum.

There are various ways of rating the performance of different instruments. One is to take a word test and note the results. The Society staff member who demonstrates the instruments understands how to give these tests, using the same level and quality of voice with each different make tried. And if, as is often the case, your physician is unable or reluctant to advise you on what type of instrument will best fit your particular hearing loss, some of the larger Societies are equipped to give audiometric tests and suggestions as to the specific devices best adapted for your needs.

Societies are non-commercial. They do not sell instruments. They guide a prospective buyer by showing him what may be reasonably expected from a man-made ear. They demonstrate the advantages of hearing aids.

Perhaps you are wondering why you should use both lip reading and a hearing aid. It is because you want all possible help that a combination of science and skill can offer. By using your eyes to supplement your ears, you are cultivating what has been called "twin pathways to the brain." Seeing and hearing should go hand in hand.

Some Societies help persons to secure hearing aids through loans or gifts. A few have revolving funds on which they can draw to help a client get a hearing aid that will enable him to find a job; then the client repays the loan from his earnings so that the same service may be offered to others. Other chapters solicit used hearing aids, and have them repaired and fitted with new batteries all ready for a job-seeker to use. Nor are these gifts and loans restricted to the unemployed. Helping housewives and mothers, grandparents, or school children to better hearing is one of the fundamental aims of the Society.

Before Pearl Harbor, the acoustically deficient experienced many difficulties on the road that led to remunerative employment. The war economy called for the services of everyone able to work, and our members came into their own. Names listed in the employment files of Societies were crossed off, one by one, and employers began calling for more applicants. They soon learned that there was less absenteeism in this group; that lip readers had acquired the ability to concentrate; that practically all hard-of-hearing persons were anxious to please; that they could shut off their instruments in noisy places and not be disturbed; that they were genuine assets.

As for bread-and-butter problems, it would seem that the war has solved them. But other employment problems will arise. As long as spinal meningitis, scarlet fever, measles, mumps, colds, and other diseases are unconquered, there will be more young people needing guidance and placement.

A few Societies have employment bureaus and do their own placement work. Most of them, however, function shoulder to shoulder with the State Rehabilitation Services. Every state in the country has such a Service or Bureau, supported partly by the state and partly by the Federal government. Physically handicapped persons who are employable may apply for training or re-training and secure it from this government-supported Service. No case is considered closed until the rehabilitated person has been satisfactorily placed in a remunerative position.

Because Societies believe in utilizing existing facilities, they refer their members and clients to these Services. In turn, they help by giving lip reading instruction or practice, providing hearing aids, and restoring self-confidence.

Among those considered unsuitable for steady employment are some who like small part-time jobs. Societies help many to pick up pin money by making it known that certain members can cook, sew, repair furniture, paint, type, or do odd jobs.

It is the aim of every Society to be a "house of friendliness," and so many diversions are offered. Card parties where bids are cheerfully repeated if necessary; game rooms where skill is the thing that counts; dances where rhythm and music are felt, rather than heard. The young people go in for hiking, swimming parties, picnics. They cultivate such hobbies as photography and pantomime at which they become very adept. They act out charades or song pictures. They sing and play musical instruments.

For years those with defective ears thought of music as a lost art. With the greatly improved hearing aids of today, most of them can hear the softest notes of a violin. In fact, some are talented musicians. In many Societies singing is a regular feature. Voices grown rusty from disuse are now following the leader and learning once more to keep on the key. And of course correct phrasing and breathing in singing result in the same good features in speaking.

Retaining pleasant tones and modulations and clear enunciation is one of the most difficult problems confronting the deafened, especially those whose loss is so great that a hearing aid does not compensate. To remedy this situation, many Societies offer voice training classes. To obtain the fullest benefit from the work, members are urged to repeat the course every year, so that voice cultivation becomes as much a habit as trips to the dentist or the hygienist. Certainly a pleasing voice is a great social and business asset!

We have been discussing many personal gains that are to be had through a Society for the Hard of Hearing, but the greatest gain of all has not yet been mentioned. It is the unlimited opportunity to work for others. Rung by rung, you climb the ladder that lifts you above discouragement, frustration, or self-pity—a degrading and destructive emotion. You acquire lip reading ability, the courage and perseverance to wear a hearing aid day in and day out, a better modulated voice, self-confidence and poise, a place in the economic world, happiness in your home and in your daily contacts, and the tremendous character gain that comes from surmounting obstacles.

It is a remarkable thing that so many adult lives have been and are being reshaped. Probably the very finest work that any Society can do is to lead the fight in the prevention of deafness and the conservation of hearing in its own community. Thus, some Societies conduct free lip reading classes for children in order to convince school boards that it is a necessary and practical skill for children whose ears are failing. Some have been active in promoting the right kind of legislation, such as compulsory hearing tests in the schools, making deafness a reportable disease, establishing lip reading classes in the schools, providing conservation-of-hearing classes for those severely impaired, and providing otological service for those unable to pay. Others have united to secure in their state department of education a specialist to direct the work for all types of physical handicaps, particularly partial deafness, which has been so long neglected. In this special field of community health you may find your own greatest growth and development.

Back in 1919, Dr. Wendell C. Phillips, a New York otologist of broad vision, proposed that the nine already established organizations in the field unite and work for rehabilitation, conservation of hearing and prevention of deafness. There are now one hundred and nineteen chapters of the American Society for the Hard of Hearing in the United States and Canada. There are still thirteen states in which no chapters have been organized; but as the ASHH expands and field work develops, it is expected that even sparsely settled states will soon have their local societies crusading for better hearing.

In the meantime, there is one department of the ASHH which extends a cordial hand of welcome to all who live beyond the reach of chapters. We call it the Everywhere League. Its members come from "everywhere." In times of peace, when mail travels normally, it knows no boundary line—no foreign country where it cannot penetrate. And since its members cannot assemble in person for lip reading classes, recreation, or the usual facilities offered by chapters, they meet by means of paper and ink. To join this department, one first joins the National Society.

Everywhere League members are divided into groups of eight or ten, with each group in charge of a leader who gives freely of his time to make the organization a success. The members correspond by means of a well-known plan—"round robin letters"—here known as ring letters. They circulate for two years; then the groups are reorganized so that new "pen friends" may be met and new interests and habits discussed.

There is an unwritten law in the Everywhere League that only one's best is good enough for a ring letter, not necessarily his best English, for the letters are just natural, unstudied outpourings, but his best thoughts, best stories, best jokes. Tales of woe are all right from new members—the Everywhere League *is* a safety valve —but those who keep up the woeful tales become very unpopular, and who wants to be unpopular? So there is a decided therapeutic value in the paper and ink—and thoughts—which make up a ring letter.

The leaders are expected to steer the correspondence in such a way that controversial topics will be avoided, unless they can be discussed objectively, with no encroachment on religious or political views. Obviously, these groups furnish a conversational channel. Even a totally deafened person can hold his own in them.

There is a contagious enthusiasm in the ring letters. To hear an insurance man tell how he conducts his business, supports his family in comfort, takes an active part in social and church life, without a vestige of hearing left—just his skill in reading lips—gives a boost to

NAMES AND ADDRESSES OF LOCAL CHAPTERS OF THE ASHH

Please note that H.O.H. stands for Hard of Hearing. *When the name is long the abbreviation has been used. It is, of course, better to use the full name.*

Albany League for the Hard of Hearing, 144 Washington Avenue; Albany, N. Y.

Asheville Society for the H.O.H., 14 Sylvan Drive; Asheville, N. C.

Augusta Soc'ty for the Hard of Hearing, 510 Greene Street; Augusta, Ga.

The Baltimore League for the H.O.H., 529 North Charles Street; Baltimore, Md.

Bangor Society for the Hard of Hearing, 54 Cottage St.; Bangor, Me.

Beverly Hills Soc. for the H.O.H., 614 Heliotrope Drive; Los Angeles 4, Cal.

Boston Guild for the Hard of Hearing, 283 Commonwealth Ave.; Boston, Mass.

Bridgeport League for the Hard of Hearing, 652 Central Ave.; Bridgeport, Conn.

Buffalo League for the Hard of Hearing, 132 Livingston Street; Buffalo, N. Y.

Calumet Society for the H.O.H., 1701 Central Ave.; Whiting, Ind.

Cedar Rapids Soc. for the H.O.H., 126½ Third Ave., S. W.; Cedar Rapids, Iowa.

Chicago Society for the H.O.H., 410 Michigan Ave. South; Chicago, Ill.

Cincinnati League for the H.O.H., 616 Walnut St., Fourth Floor; Cincinnati, O.

Colorado Springs Society for the H.O.H., 130 East Monument St.; Colorado Springs, Col.

Columbia Society for the H.O.H., 1514 Assembly St.; Columbia, S. C.

Columbus Society for the Hard of Hearing, 55 East State Street; Columbus, O.

Compton Society for the H.O.H., 126 E. Elm St.; Compton, Cal.

Concord Society for the H.O.H., 22 Fayette Street; Concord, N. H.

Covina Society for the H.O.H., 300 W. Rowland Ave.; Covina, Cal.

Dallas League for the H.O.H., 204 Reilly Bldg.; Dallas, Tex.

Davenport Society for the H.O.H., 115 W. 6th St.; Davenport, Iowa.

Dayton League for the Hard of Hearing, 924 U. B. Building; Dayton, O.

Denver Society for the Hard of Hearing, 1556 Emerson Street; Denver, Colo.

Des Moines Society for the H.O.H., 213 Jewett Bldg.; Des Moines, Iowa.

Detroit Society for Better Hearing, 4242 Cass Avenue; Detroit, Mich.

East Bay Society for the H.O.H., 800 Portal Ave.; Oakland 10, Cal.

East Orange Society for the H.O.H., 109 Carnegie Ave.; East Orange, N. J.

El Paso Society for the H.O.H., 3000 Lebanon Street; El Paso, Tex.

Erie Society for the Hard of Hearing, 315 West Tenth St.; Erie, Pa.

Eugene Society for the Hard of Hearing, 717 Jefferson St.; Eugene, Ore.

Fall River Society for the H.O.H., 335 Whipple Street; Fall River, Mass.

Ft. Wayne Soc. for the H.O.H., 2321 Hanna St.; Fort Wayne, Ind.

Franklin Co. Society for the H.O.H., Room 5, Hovey Block; Greenfield, Mass.

Fresno Society for the H.O.H., 245 North Calaveras Street; Fresno, Cal.

Gary Society for the Hard of Hearing, 318 Taft St.; Gary, Ind.

Glendale Society for the H.O.H., 205 W. Broadway; Glendale, Cal.

Grand Rapids Society for the H.O.H., 304 Ass'n of Commerce Bldg.; Grand Rapids, Mich.

Hartford League for the H.O.H., 252 Asylum Street; Hartford, Conn.

Holyoke League for the H.O.H., 63 Fairfield Avenue; Holyoke, Mass.

Houston Soc. for the Hard of Hearing, 2108 Austin St.; Houston, Tex.

Imperial Valley Society for Better Hearing, Box 1617; El Centro, Cal.

Indianapolis Society for the H.O.H., 318 Board of Trade Building; Indianapolis, Ind.

Inglewood Society for the H.O.H., 522 West Spruce St.; Inglewood, Cal.

Jersey City League for the H.O.H., 719 Bergen Ave.; Jersey City, N. J.

Kansas City League for the H.O.H., 1 W. Linwood; Kansas City, Mo.

Kern County Society for the H.O.H., Room 4, Memorial Building; Bakersfield, Cal.

Lansing Society for the H.O.H., 214 N. Washington Ave.; Lansing, Mich.

Lewiston-Auburn Society for the H.O.H., 100 Gamage Ave.; Auburn, Me.

Lincoln Soc'ety for the H.O.H., Stuart Room, Y.W.C.A.; Lincoln, Neb.

Long Beach Soc. for the H.O.H., 124 W. 14th St.; Long Beach, Cal.

Long Island Society for the H.O.H., Elmont Road; Elmont, N. Y.

Los Angeles Society for the H.O.H., 1383 No. Wilton Place; Hollywood 28, Cal.

Louisville League for the H.O.H., 450 S. 3rd Street, 3rd Floor; Louisville, Ky.

Lynchburg Society for the H.O.H., 1705 Parkland Drive; Lynchburg, Va.

Lynn League for the Hard of Hearing, 59 Baltimore St.; Lynn, Mass.

The Manchester Soc. for the H.O.H., Inc., 448 Amherst St.; Manchester, N. H.

Miami Soc. for the Hard of Hearing, 405 Congress Building; Miami, Fla.

Milwaukee Society for the Hard of Hearing, 308 W. North Ave.; Milwaukee 12, Wis.

Minneapolis League for the H.O.H., 1722 Hennepin Ave.; Minneapolis, Minn.

Montreal League for the H.O.H., 764 Bloomfield Ave.; Montreal, Can.

Muskegon Society for the H.O.H., Room 401, Lyman Building; Muskegon, Mich.

Nashua Society for the Hard of Hearing, 38 Ferry St.; Hudson, N. H.

Nashville Society for the H.O.H., 207-209 Chamber of Commerce Bldg.; Nashville, Tenn.

Newark League for the H.O.H., Y.W.C.A., 53 Washington Street; Newark, N. J.

New Bedford Society for the H.O.H., 21 South 6th Street; New Bedford, Mass.

New Haven League for the H.O.H., 29 Norton St.; New Haven, Conn.

Newport League for the Hard of Hearing, 18 Meeting Street; Newport, R. I.

The New York League for the H.O.H., Inc., 480 Lexington Avenue; New York City.

Oklahoma City Society for the H.O.H., 501 Y.W.C.A.; Oklahoma City, Okla.

Omaha League for the Hard of Hearing, 5813 North 30th St.; Omaha, Neb.

Orange County Society for the H.O.H., 748 Topeka St.; Anaheim, Cal.

Owosso Society for the Hard of Hearing, 531 Pine St.; Owosso, Mich.

Pasadena Society for the H.O.H., 470 South Grand Avenue; Pasadena 2, Cal.

Paterson League for the H.O.H., 114 WPAT Building; Paterson, N. J.

Philadelphia Society for Better Hearing, 1821 Chestnut St.; Philadelphia 3, Pa.

Phoenix Society for the Hard of Hearing, 2310 No. Dayton; Phoenix, Ariz.

Pittsburgh League for the H.O.H., 74 Methodist Building; Pittsburgh, Pa.

Plainfield League for the H.O.H., 816 Madison Avenue; Plainfield, N. J.

Pomona Society for the H.O.H., 883 Columbia St.; Pomona, Cal.

Portland Society for the H.O.H., 592 Preble Street; So. Portland 7, Me.

Portland Society for the H.O.H., 39 Selling–Hirsch Building; Portland, Ore.

Providence League for the H.O.H., 42 Weybosset St.; Providence, R. I.

Pueblo Soc'ty for the Hard of Hearing, 1102 W. Abriendo Ave.; Pueblo, Colo.

Redlands Society for the H.O.H., 814 Campus Ave., Redlands, Cal.

Richmond Society for the H.O.H., 3019 Montrose Ave.; Richmond, Va.

Riverside Society for Better Hearing, 4008 Chestnut St.; Riverside, Cal.

Rochester League for the H.O.H., 130 Clinton Avenue; S. Rochester 4, N. Y.

Rockland Society for the H.O.H., 5 Beech Street; Rockland, Me.

Sacramento Society for the H.O.H., 3050 Donner Way; Sacramento, Cal.

St. Louis League for the H.O.H., 4527 Westminster Place; St. Louis, Mo.

St. Paul Society for the H.O.H., 306-12 Frontier Building; St. Paul, Minn.

St. Petersburg Soc. for the H.O.H., 16 Alhambra Arcade; St. Petersburg, Fla.

Salt Lake Soc'ty for the H.O.H., 544 S. Main Street; Salt Lake City, Utah.

San Antonio Hearing Center, 317 Hicks Building; San Antonio, Tex.

San Bernardino Society for the H.O.H., 118 W. Fern Ave.; Redlands, Cal.

San Diego Society for the H.O.H., 3843 Herbert St.; San Diego, Cal.

S. F. Society for the H.O.H., 126 Post Street; San Francisco, Cal.

San Jose Soc. for the H.O.H., 460 N. 15th St.; San Jose, Cal.

Santa Barbara Society for the H.O.H., 800 Santa Barbara Street; Santa Barbara, Cal.

Santa Cruz Society for the H.O.H., 11 Rathburn Way; Santa Cruz, Cal.

Santa Monica Society for the H.O.H., 1920 Santa Monica Blvd.; Santa Monica, Cal.

Seattle Society for Better Hearing, 317 Bay Bldg.; Seattle, Wash.

Sioux City Society for the H.O.H., 1324 West 5th St.; Sioux City, Iowa.

South Bend Society for the H.O.H., 718 S. Carroll St.; South Bend, Ind.

Southern California Breakfast Club, 462 Oakhurst; Beverly Hills, Cal.

Spokane Soc. for the H.O.H., W. 3919 Hoffman Ave.; Spokane, Wash.

Springfield League for the H.O.H., Massasoit Bldg., Rm. 211; Springfield, Mass.

Stockton Society for the H.O.H., 47 East Geary St.; Stockton, Cal.

Syracuse Soc. for the H.O.H., 425 James St.; Syracuse, N. Y.

Tampa Society for the H.O.H., 113 No. Delaware; Tampa 6, Fla.

Three Beach Soc. for the H.O.H., 1140½ Railroad Drive; Manhattan Beach, Cal.

Toledo League for the H.O.H., 2313 Ashland Ave.; Toledo, O.

Tucson Society for the H.O.H., 70 East Alameda; Tucson, Ariz.

Utica Society for the H.O.H., 414 South St.; Utica, N. Y.

Vancouver League for the H.O.H., % 790 West 6th Avenue; Vancouver, B. C.

Washington Soc. for the H.O.H., 2431 14th St., N. W.; Washington, D. C.

The Winnipeg League for the H.O.H., Y.W.C.A., Ellice Ave.; Winnipeg, Man., Can.

Worcester League for the H.O.H., Parish House, 72 Pleasant St.; Worcester, Mass.

Youngstown Society for the H.O.H., 250 Falls Ave.; Youngstown, O.

even the heaviest spirit. To hear others discuss books, plays, ballets, and music, in spite of little or no hearing, is to realize with Victor Hugo that "the only deafness, the true deafness, the incurable deafness, is that of the intelligence. What matters deafness of the ear, when the spirit hears?"

Truly the Everywhere League is a lane which runs along the by-ways and leads to broader thinking—and better living.

All members of the ASHH receive a monthly publication, *Hearing News*. Through it they learn of developments in the fields of medicine or acoustics that have any bearing on their own personal problems. They learn what the chapters are accomplishing; what special legislation is pending or has been passed; what regional or national meetings are being held; how the war has affected hearing aid batteries and service generally. Its advertising pages present reliable information. Its articles are factual and constructive rather than sensational.

Perhaps nothing demonstrates the worth and standing of the Society better than the fact that frequent consultations were sought with staff members when the United States Army began planning its reconditioning program for war-deafened service men and women. As the planning progressed, the American Red Cross asked our Board of Managers to release Miss Betty Wright, Executive Director, for four months in the spring and summer of 1944 that she might serve as Consultant on Hearing Problems in their Services to the Armed Forces.

Miss Wright visited the one Navy and three Army Hospitals where the reconditioning programs were established, studied their programs, held consultations with the hospital staffs, and formulated written material to be shared with the personnel.

The Society has also worked closely with the Veterans Administration in its plans for deafened veterans and has strengthened its co-operative relations with the United States Office of Vocational Rehabilitation and the State Rehabilitation Services. One of the first visible results of this co-operation is the Veterans Sounding Post, the Service Center just opened by the New York League for the Hard of Hearing, at 480 Lexington Avenue, to meet the special needs of deafened veterans of World War II.

From the horrors of war and the tragedy of sudden or aggravated deafness among soldiers and sailors, some good will yet eventuate; for the light of new research is being turned on their problems. Eventually, hard-of-hearing civilians will reap the benefits.

In the meantime, the American Society for the Hard of Hearing continues its traditional work of prevention, conservation and research.

Speech Suggestions for the Hard of Hearing

BY MARY C. NEW, *Assistant Principal, Academic Department, Lexington School for the Deaf, N. Y.*

THE following chapter should be studied and compared with the chapter on How to Improve Your Speech, in Section II. The author, Miss Mary C. New, as assistant principal in one of the country's most noted schools for the deaf, has been a keen observer of the tragic effects of defective speech—and what can and must be done to correct it.

The clarity and simplicity of her presentation springs from a rich background of experience. It becomes all the more significant, therefore, when she stresses that although one of the major problems of a hearing loss is the accompanying vocal deterioration, nevertheless the handicapped have no priority on faulty diction . . . and that anyone—whether his acoustical equipment is normal or below par—can by diligent effort achieve a better speech and voice. L. B.

MANY OF YOU know from personal experience just how many and how complex are the problems of those who have experienced a partial or total loss of hearing, whether that loss came suddenly or over a period of years. You know that one of the major problems of a hearing loss is the accompanying deterioration of speech and voice; what you want to know *more* about is what you can do to preserve pleasant voices and clear and intelligible speech. It is possible to retain excellent speech and voice quality where the hearing has been faulty over a period of years, for we all know persons who in spite of deafness have continued to have outstandingly attractive speech. It is possible on the other hand to lapse into habits of unattractive voice qualities and sloppy speech, for we all know persons who, because of their deafness, have allowed discordant voices and almost unintelligible speech to develop. Why is it that some deafened persons retain good speech and voice while others do not? It is evident that the entire responsibility for poor speech cannot be placed solely upon faulty ears. There must be other factors present that tend to prohibit or promote good use of speech and voice.

From experience and observation it would seem that the first important step toward retaining good speech and voice is the consciousness that any loss of hearing tends to bring about some deterioration of natural speech. How rapid the loss of normal speech and voice quality may be when the hearing is interfered with, can most easily be illustrated by the example of a woman in a beauty parlor having her hair dried under an electric dryer. All of you who frequent beauty parlors have no doubt noticed that a woman who has been speaking in a perfectly normal, pleasant tone of voice will, as soon as the dryer is turned on over her head, speak in a penetrating tone, or mumble in a muffled tone. This one instance tends to show the importance of the ears in relation to speech. The woman under the dryer has her hearing disturbed temporarily and as soon as the machine is removed her voice returns to normal. Should

this disturbance not be temporary, but indefinitely prolonged, then those changes that occurred in the woman's voice would become set habits and speech deterioration would be started on its way. The consciousness of the relationship between impaired hearing and defective speech is important. If one knows what to expect, one also knows what to guard against.

The next step involves attitudes, the attitude of the deafened person and of his family and friends toward this speech and voice deterioration which is to be expected unless precautions are taken to prevent it. Undesirable tendencies begin to show up when the hearing is disturbed; tendencies to speak too loud or not loud enough; tendencies to use a voice that is constricted; tendencies to leave off word endings, or to leave out syllables, or to mispronounce words. These are tendencies at first—not habits. The deafened person who is, first of all, conscious that his loss will affect his speech, and, second, whose attitude is one of being willing to accept constructive criticism in order that poor speech will not become a habit, has won the first victory in the fight for better speech in the years to come.

Now what of the families and friends of the deafened? Some of these are reluctant to mention changes in the voice and speech of a hard-of-hearing member of their group. They are afraid of hurting feelings or of arousing a spirit of resentment or anger in the person who already has to contend with the baffling annoyances of deafness.

It is not only misguided kindness, but it is really cruel if attention is not called to those changes that will eventually take place in the speech of the hard-of-hearing person.

Deviations from the normal occur in the essentials of (1) voice quality, (2) phrasing, (3) pronunciation, and (4) enunciation. Changes in voice quality are the most subtle and most difficult to combat, because those very qualities which are termed good—namely, voices that are resonant and full, voices that are pleasantly modulated as to pitch, voices that are pleasantly audible—seem to be dependent upon good hearing. How then can a deafened person keep what is good in his voice and prevent bad habits from creeping in? First of all, he should use whatever is left of his hearing to its utmost capacity. The persistent use of a good hearing aid cannot be stressed enough, no matter how small the residue of hearing. It is now an established fact that the continuous use of an aid over a period of years does have a beneficial effect upon the voice and speech.

In addition, the deafened person should ask his family and friends to tell him when the quality or pitch, or the force of his voice is not good, and then try to associate an "inner feeling" within his throat with what is desirable or undesirable, so that he can come to depend upon a sense of *feeling* what is right to take the place of *hearing* what is right.

Good voice quality is determined by the speaker's mental picture of tone, for once speech is spoken it is too late to alter its sound. Professional speakers and singers develop a feeling for the right production of tone. They make adjustments within their throats *before* sounds are uttered. They are conscious beforehand of what they want to hear, and through practice and effort achieve an inner control that enables them to produce the sounds they wish. The hard-of-hearing person can also develop a concept of inner control, a feeling for what is good in tone production. This cannot be done alone; it requires the help of a relative or a friend whose own ear is sharp enough to notice deviations from normal speech. If you have no friend or relative who can fill this need for you, secure the services of a speech teacher who can help you in establishing this kinesthetic concept of control.

To describe anything so subtle as voice production, and especially the inner control over the voice, is an extremely difficult task. It is being attempted here because those of us who are interested in the voices of the deafened believe that the development of this control—plus the constant use of a good hearing aid—combine to offer the best possible help in avoiding voice deterioration.

Briefly stated, the use of the tactile and kinesthetic senses to bring about an inner control of the voice can be developed in this way. The teacher listens for faults of voice and speech. As they appear, the teacher calls attention to the fact that the voice is too high or too loud or too constricted, or whatever the fault may be, and asks the deafened person to repeat what he has just said and at the same time concentrate upon how it felt in his throat. If the pupil has enough hearing left, the mere suggestion that the voice quality was poor may be of sufficient help to improve what was incorrect as the sentence is repeated. This improvement, however, should be consciously associated with the sensation in the throat when the better voice quality is used. It is awareness of this feeling that develops the desired "inner control."

If the pupil has not enough hearing left to protect his voice from acquiring faulty habits, then he must develop the kinesthetic and tactile senses alone as guards against faulty voice and speech. In this case, the teacher would repeat the exercise or the sentence in a good, clear normal tone and at the same time place the hands of her pupil upon her face so that the vibrations of normal speech can be felt. The student would then repeat what the teacher said and try to duplicate the feeling of resonance in his own face, at the same time concentrating upon how the good, resonant tone quality felt (kinesthetically) in his throat. The importance of a good speech helper or teacher, is very evident, for if the hard-of-hearing person is to develop this inner control successfully, he must know when what he says is good, or not good. Thus he can associate what he feels in his throat either with something which he wishes to develop more fully, or to discard completely. This type of control could not be learned without the help of an interested and intelligent helper.

The problem of correct phrasing does not present great difficulties. Phrasing means the speaking of thought-groups of words together so that the general pattern of speech is rhythmical and smooth. It

implies thinking ahead of what one intends to say so that meaningful groups of words can be arranged into units of speech. The rhythm of the English language depends upon the saying the these thought-groups of words; the rise and fall of the voice in these thought-groups depend upon meaning; and meaning is expressed by the stressing of the important words in the groups.

Pronunciation would not seem to offer insurmountable barriers. Some deafened persons have said, however, that they actually have forgotten how to pronounce words which they do not use constantly. The best guide for pronunciation is the dictionary. To use the dictionary successfully it is necessary to know the sounds of the letters, and to observe the diacritical and stress markings. Whether one has normal hearing, a slight loss of hearing, or severe deafness, one of the best ways to learn a new word is to see that word written, with its phonetic counterpart alongside. Look at the word and repeat it over and over. The joint use of the eyes, the ears, and the inner control of the throat combine to place a new word securely in our consciousness and make it independently ours. Careless slips in pronunciation are: leaving off the endings of words; leaving out syllables; placing the accent on the wrong syllable. These are not so difficult to correct but they are tendencies toward careless speech that, if allowed to develop, will eventually make speech extremely difficult for the listener to understand.

The problem of enunciation involves the good usage of those sounds that go to make up words. It means taking care that *p* does not come to sound like *b*, *t* like *d*, *s* like *sh* or *th*. It means taking care that your *m*'s, *n*'s, and *ng*'s continue to keep their ringing qualities, and that your vowels are full and clear.

To summarize, then, the keeping of good speech and voice is a responsibility that must be shared by the deafened person and those around him. On the part of the family and friends it means a sympathetic understanding of the changes that deafness brings into speech and voice; a willingness and forthrightness to bring them to the attention of the hard-of-hearing person and a determination to help that person keep good speech and voice quality. On the part of the deafened person it means an awareness that depreciation in hearing is usually accompanied by deterioration in speech. It means a readiness to accept constructive criticism; a willingness to wear an instrument and a determination to use whatever hearing is present; the establishment of an inner control over the voice; constant vigilance against tendencies to disrupt good habits of voice, phrasing, pronunciation and enunciation.

If it is of any consolation to all concerned, people with hearing losses have no priority on defective speech. The prevalence of poor speech among those with normal hearing is an accepted but unfortunate fact. Another fact remains, however, and that is that anyone—whether he possesses normal or defective ears—can improve his speech and voice if he earnestly desires to do so, and will work diligently and intelligently toward that end.

Insurance and the Hard of Hearing

BY RALPH J. CROSBY

CERTAIN practical aspects of deafness have always been shrouded in mystery. A great deal of misinformation still goes the rounds on such subjects as insurance for hard-of-hearing perons, their liability to accidents, and their debarment from so-called "dangerous" lines of work.

Indeed, readers of Part I, Chapter 12, may have believed me guilty of foolish optimism in my discussion of jobs. They may recall, within their recent experience, how various employers rejected applicants on the ground that insurance companies would not accept them. Actually, this statement represents a rather superficial alibi . . . the employer really fears that the hard-of-hearing will have more accidents and consequently increase his liability rate.

Ralph J. Crosby, a safety engineer and insurance expert, here presents surprising data and constructive conclusions. He shows how and why, acording to safety and insurance standards, the acoustically handicapped—as compared with the limitations of others—are at no particular disadvantage because of their impairment.

This is emphatically a YOU chapter. Read it carefully. It can put money in your pocket and backbone in your morale.

L. B.

THE LIVELIHOOD of each one of us is influenced by insurance. We protect our resources by insuring against loss of property by fire, theft or destruction in any manner. We protect ourselves from the direct effects of legal action by adequate liability insurance. We protect our dependents by life insurance, either by an individual contract or as a member of a group. We protect ourselves against loss of income because of personal injury either by separate accident insurance or as an employee of a concern that must provide compensation.

In the purchase of personal insurance by an individual, his character, his financial status, his physical condition and state of health will naturally have a bearing upon the availability of the insurance and the amount of premium that must be paid. But that same individual as a member of an employed group will not penalize himself, his fellow employees or his company because of some personal deficiency.

That is a general statement which obviously applies to individuals with a deficiency in hearing which is the problem that is our immediate concern. The hard-of-hearing are at no particular disadvantage because of their. impairment as compared with the limitations of others.

Accident insurance is available except in cases of total deafness. The amount of insurance that a company will consider will depend upon the extent to

which a hearing aid is needed. Inability to hear emergency warnings would naturally increase the probable chance of injury.

As respects life insurance, an impairment in hearing unless associated with some other bodily disorder, does not present any real problem. In the past it was customary to require an extra $2 to $5 per $1000 of insurance depending upon the plan of insurance and the attitude of the individual company. The present-day tendency, however, is to deal much more leniently with applicants—even those totally deaf; many life insurance companies offer insurance at regular rates, except for term insurance.

Group life insurance presents no hurdle at all. Physical examinations are not required if an employee joins in the group plan within the allowed time. But even when an examination is required, deafness will not exclude an applicant.

The one form of insurance the hard-of-hearing are probably most concerned about is compensation insurance.

Do insurance companies discourage their employment?

Do they penalize an employer by an increase in rate because there are deaf employees or others who require hearing aids?

Do the insurance companies records show that they are more prone to have accidents?

Do insurance companies through their accident prevention activities influence employers to avoid hiring the hard-of-hearing because of possible unfavorable effects upon the loss experience?

Are there any practical steps that can be taken by both the employer and the employee that will minimize the occasion for accidents?

These are questions that have been frequently asked and which we should be able to answer convincingly and without evasion.

An employer is not penalized by an increase in rate because he has deaf employees. The initial rate for Workmen's Compensation Insurance is governed by the industrial classification involved. The physical defects of such workers are not considered in the formula for determining that rate. No higher rate is charged because of employment of physically handicapped persons, nor is such employment prohibited in any way by the terms of Workmen's Compensation Insurance policies. It is true, however, that accident experience, good or bad, will ultimately be reflected in the cost of insurance.

Insurance companies do not discourage the employment of the hard-of-hearing. If there has ever been any evidence of this kind, it was on the part of some individual representative who was not familiar with the company attitude or some unethical company of very doubtful financial responsibility. Our reputable companies have not and will not urge an employer to avoid deaf workers as a condition determining the issuance of a policy.

I wish to quote from a printed statement published by the Association of Casualty and Surety Executives:

"Since there may be misunderstanding of the attitude of insurance toward the employment of disabled persons in industry, and because of experience in the field of Workmen's Compensation Insurance, and because the insurance industry itself employs a great number of people, it seems proper for the Association of Casualty and Surety Executives to state the attitude of its member companies toward the employment in industry of disabled persons.

"The membership of the Association consists of sixty-one capital stock insurance companies which write a large volume of Workmen's Compensation Insurance country-wide. If any impression prevails that companies writing Workmen's Compensation Insurance exercise influence upon employers in the selection of workers and advise employers against the employment of disabled persons (because of the likelihood that employment of the disabled will result in an increase in cost to the employer of Workmen's Compensation Insurance), that erroneous impression should be corrected. It is the policy and practice of the member companies of this Association *not* to advise employers against the employment of disabled persons."

There may be some employers who use the insurance company as an excuse for not hiring hard-of-hearing applicants. In fact, I am told that some evidence has been presented that applicants with an impairment have been turned down with the explanation that the insurance company won't insure them.

In view of the quoted statements such excuse has no factual basis. The employer is attempting to hide behind the insurance company when probably his real reason is actually fear of more accidents and increased accident cost. Such employers have little or no knowledge of these workers and their capabilities. They have merely taken it for granted that deaf people are undesirable and incompetent.

The insurance companies have no records to show that the hard-of-hearing are involved in more accidents than other groups. The data that is available disproves any such assumption; in fact the only conclusion that can be drawn is that their record is better than the average.

A recent pamphlet, *Untapped Manpower,* issued by the United States Civil Service Commission, is authority for the statement that the physically handicapped are good workers. It offers evidence that their absenteeism, tardiness and turn-over records are strikingly better than those of the able-bodied; that they have fewer accidents; that they are conscientious, superior workers; that they expect no favors and produce as well as or better than the average of people not handicapped.

In the October 1944 issue of *Executives,* published by the Metropolitan Life Insurance Company, Mr. English O'Connor of J. C. Penny Co. writes: "At present we have on our payroll 26 employees who are totally deaf—all on regular warehouse work. When the first of these was engaged I was apprehensive that he might be injured by a truck coming upon him from the rear. However, I found that a totally deaf

person can feel the vibrations of an approaching truck even on a concrete floor. We have never had an injury to a deaf person from such a cause."

A radio equipment manufacturer employing over 30 deaf workers at one plant says, "their production record indicates that they produce equally well and sometimes better than their fellow employees not so handicapped. The accident rate covering the group of deaf and hard-of-hearing employees is very low and our records for the past several years do not show any deaf mutes as having sustained a major injury." And this opinion has been seconded by most important companies, including Goodyear Tire and Rubber, Curtiss-Wright, Douglas Aircraft and Henry Ford.

The same compensation laws apply to these employers as apply to the concern that tries to hide behind an insurance company and use the alibi that their compensation insurance policy does not permit employment of the hard of hearing.

Why do accidents occur? They just don't happen. By far the greatest majority are not the result of some unforeseen or unexpected circumstances. It is a generally accepted fact that not more than 2 per cent of all accidents fall into this classification which is commonly referred to as "acts of God."

The great majority of accidents, 88 per cent in fact, are chiefly the result of individuals doing something contrary to the way they were told and contrary to the accepted right way of doing the job.

If industry could discipline employees to the extent that they would do what you wanted them to do and in the way you wanted them to do it and when you wanted them to do it, our national accident experience would present a far more pleasing picture than it does today.

Therein lies the secret of why the deaf and hard-of-hearing have produced a good accident record. Therein is the reason why an employer need not fear that his loss experience will suffer unnecessarily because he has hard-of-hearing employees. These employees have already learned the value of self-discipline. They know the value of following specific instructions. They are not guilty, as is so often the case with individuals who assume that they have no deficiency, of disregarding rules and saying, "Now I'll do it my way."

When an accident does occur, there is a definite sequence of factors, one of which is the accident itself. Let us consider these factors not in the order of occurrence but rather in the order that we learn about them when we do have an accident.

The last factor in the sequence is the injury but it is usually the first thing that we learn about an accident. Even if we were in the immediate vicinity when the accident occurred, we very rarely witness the actual accident. We hear an outcry or a commotion but by the time we turn our head we witness only the result of the accident. The injury is caused by the preceding factor in the sequence, the accident itself. An accident is an event such as being struck by or striking against or caught in or falling on and is caused by the next preceding factor in the sequence. This factor we term the direct cause and will always be an unsafe act of an individual or an unsafe physical condition or a combination of the two. There has never been and there will never be an accident that is not directly caused by an unsafe act or an unsafe physical or mechanical condition.

The prevention of accidents is actually the elimination of unsafe conditions such as the guarding of machinery—which is a mechanical problem—and the training and supervision of employees so that they will do their work in the right way. We don't have accidents hiding around corners ready to jump out at us. But we do have individuals who fail to observe the rule when negotiating a corner either on foot or with a vehicle.

A knowledge of the reason why individuals violate safe practices very often gives us the clue as to how we can approach the problem of preventing a reoccurrence. There may be many reasons. Sometimes it is because of the improper attitude of the employee. He may be reckless, absent-minded, nervous or excitable. He may have no respect for order and wilfully disregard instructions. Sometimes the reason why unsafe practices are committed is that the individual failed to understand his instructions or was not convinced of the unsafeness of the practice. Such reasons why employees do the wrong thing often may be difficult to detect as a characteristic of a person before he is assigned to work. Our corrective action from the standpoint of accident prevention must therefore often be delayed until after the employee has been assigned and the opportunity presents itself for observing his compliance or violation of safe working practices.

In some cases we may find that the reason is some bodily defect, such as poor eyesight, existing hernia, an organic weakness or impaired hearing. These conditions may not have existed at the time of employment and regular check examinations were not a part of the plant procedure. When such a condition is found, very definite corrective action can be taken which is much more dependable than our efforts to correct undesirable characteristics that may influence people at any time.

In the case of the deaf or hard-of-hearing applicant, the employer, because he knows of the impairment, has the opportunity to assign this man to a job or location that removes entirely or at least greatly minimizes the probability of an accident. This is a much more practical thing to do than to attempt to assign employees who possess unknown deficiencies such as lack of skill, lack of dexterity, lack of ability to coordinate or lack of ability to concentrate. But these inadequacies, we later find, are the reason why many unsafe acts are committed. The deficiency, however, is usually never recognized until after the accident has occurred. It is a much more practical task to deal with a known quality such as deafness than to trust to luck in dealing with such unknowns as I have just mentioned.

There are many practical things that an employer

can do to remove any fear or doubt from his mind that the employment of the deaf or hard-of-hearing will have a detrimental effect upon his compensation loss experience.

The selection of employees should not be limited only to the determination of deficiencies. Individuals may and frequently do have efficiencies that more than offset their handicaps. An employer should determine the abilities of an applicant as well as his disabilities. Experience has shown that a deaf person can work at practically any sort of a job so long as the position does not require the ability to hear perfectly. And if we may judge from the experience of others which I have quoted above, they perform their duties with an efficiency better than average.

It is not a difficult problem to allocate the hard-of-hearing to jobs or locations that remove the need for depending upon their ears in order to avoid injury. They can be located away from power-truck traffic aisles that may use an audible signal. Definite routes can be designated for going to or from wash rooms or to other departments or when leaving and entering the premises so that they avoid any location that may have signal bells or other audible warning devices.

They can be located away from the operations of any traveling cranes or the hazard of overhead loads where verbal warnings or signal bells may be used; and they can be assigned to work where frequent verbal orders such as may be given on a shipping platform are unnecessary.

Hazards of this nature are not difficult to determine and in fact should be known if a proper job-safety analysis has been made. Such an analysis is already accepted as an important part of modern accident prevention work.

After the assignment has been made the employer can provide job instruction in a manner that does not depend upon hearing. Even for employees who can hear we know that the most effective method of instruction is to demonstrate in action and by pictures how to do the job in the right way. The employee can be observed and any faults can be readily corrected by demonstration. The use of slides films to supplement written instructions is a method of training especially adaptable to the hard-of-hearing.

After the training period, the safety of the employee will depend chiefly upon his own ability to discipline himself to follow instructions. You will remember that I said that the majority of accidents occur because employees fail to follow instructions. They adopt chance-taking habits. They do not do what they are told to do. Here again experience shows us that the deaf and hard-of-hearing employee are better than average. They do follow instructions. They concentrate on their work rather than daydream or permit themselves to be distracted from what they are doing.

Accidents don't occur when employees do what they are supposed to do. If it is a characteristic of a handicapped individual to be unusually conscientious about doing exactly what he is told to do, then an employer should welcome such an employee rather than be fearful of his employment.

There are many other things that industry and individuals can do for the improvement of an impairment of hearing. For example, the use of hearing aids, the periodic audiometric examination, the elimination or reduction of troublesome noises, the placement of individuals with slight loss of hearing so as not to aggravate the condition, the use of protectors—to mention just a few.

All these facts have been recognized by accident prevention engineers. We have not at any time, therefore, taken the attitude or attempted to influence employers that the employment of the deaf or hard-of-hearing automatically introduces a potential increase in his loss experience. Rather, we have been educating employers that the causes of accidents are in most cases identical with the causes of production inefficiency; that the methods of preventing accidents are the same as the correction of production problems. Production suffers, equipment is damaged and loss of finished products results because employees do something contrary to instructions. They have accidents for the same reason. Fix one and you fix the other. The fact that a man has an impairment in his hearing has nothing to do with preventing him following instructions. Remove the hard-of-hearing from obvious hazards outside of their control and you have workers whose accident record is better than average. That is the opinion of insurance engineers today.

Psychological Aspects of Deafness

BY FOSTER KENNEDY, M.D.

Probably more ink has been spilled on "inspirational" topics than a good-sized factory can manufacture in years of prosperity. Dreamers, crackpots, and fools have poured out millions of words on blue sky literature. More than a fair share of this ecstatic output has been dedicated to the deafened.

The silver-lining escapists can always prove that everything happens for the best—that deafness not only has its compensations, but even its advantages. Yet "be glad you're deaf"—their favorite theme song—seldom has the soothing effect they intend. Instead it arouses the unfortunate victim to thoughts of manslaughter.

True inspiration does more than banish depression—more than create glorious dream fantasies. It trumpets a call to action . . . it acts as a spur to achievement.

For these reasons I commend Dr. Foster Kennedy's paper on *Psychological Aspects of Deafness*. The author, one of America's outstanding psychiatrists, challenges both our minds and our hearts with his statement: "It is possible to turn even a defeated sense organ into a weapon for triumph."

All of us can rise to higher levels by living up to and with Foster Kennedy's philosophy. L. B.

A PATIENT once described to me his complete deafness as being always on the wrong side of a heavy plate-glass window.

The completely deaf may develop a sense of isolation: the incompletely deaf, without a hearing aid, a sense of insecurity and anxiety.

We know that a dominant mood gives rise to thoughts dyed the color of the mood; out of insecurity and anxiety may crystallize notions of suspicion of people around one. Suspicions may grow into certainties and certainties are not far from delusional ideas of the persecutory paranoid type. This is the worst that can happen in the mind of the deaf person and it is a possibility which must be challenged, fought and defeated. But conflict is at the root of all living. Without attrition there is nothing but discontented twilight. It is possible even to turn a defeated sense organ into a weapon for triumph.

Harriet Martineau always said that her inability to hear any general conversation greatly enlarged the circle of her friendships, for she concentrated on whomever she talked with and, as there is good in everyone, she found the world a lovely place.

Edison, grappling with his practical scientific problems always believed he could never have reached his abilities for mental concentration had he been distracted by all the noises of the world which he himself did so much to collect, embalm and distribute.

Sir Joshua Reynolds lacked that peculiar self-deception which so characterized those who found hearing difficult in contrast with those who saw poorly, for he painted several portraits of himself, complete with ear trumpet.

I have always thought that the reading of a detective story required utter mental concentration. One can skim a detective story with profit no more than one can skim with profit a new poem and it is interesting that Edgar Wallace found in the making of his detective stories the lonely man's chess game. He always believed his tremendous output of detective fiction would have been impossible for him if he had had to put up with the tittle-tattle of the world.

It is interesting to note that the facial expression of the blind is usually one of smiling peace and that of the hard-of-hearing one of depression and anxiety. This mood can be fought against, first by a deliberate conscious acceptance of one's deafness. The assumption of a smiling countenance by itself lifts the spirits not only of the owner of the smiling face, but of his friends, to whom thereby he becomes welcome. The challenge of deafness ought to increase the zest.

Techniques can be found in systems of deep breathing, elaborated so fully by the Yogis of India, in learning the management of the voice regarding its pitch and loudness, in a refusal to interrupt the conversation of others by watching their facial expressions and their lips and, above all, in the mastery of lip reading—first suggested as far as I know by an Englishman called Bulwer in 1648, the same date as the Treaty of Westphalia which bestowed the boon on the world of the end of constant religious warfare.

Lip reading would seem to be no more difficult than the learning of Braille and our deaf, hard-of-hearing friends should be urged to its accomplishment.

Herbert Spencer lived in a boarding house and we are told that after dinner he would seat himself in a chair in the common living room, having first carefully adjusted a pair of impenetrable ear muffs. And a deafened relative of mine told me last week that, newly arrived in London, he found himself in a much better position than any of his hearing friends in that he detached himself from the robot bombs when he detached his hearing apparatus, though his equanimity was disturbed one night at two o'clock in the morning when his bedroom windows fell about him.

The theatre need not be closed to the hard-of-hearing if they will learn to read the play before going to it, if they learn to appreciate the theatre of marionettes. If they will learn to read music they can still hear symphonies, and while music appeals apparently to the mid-brain, the intellect has its music in poetry which is the spearhead of every civilization and can become a companion and solace beyond price.

And there are many occupations and diversions for deaf people who have cultivated, as the deaf must more than ourselves, high powers of mental concentration. To become proficient in photography, gardening, painting, sculpture, golf, or cooking, and to be able to read without interruption is to be a friend of all the great minds of the world.

To overcome a handicap is to develop the latent greatness that lies in each of us.

I have from time to time been asked, with some malice, if infantile paralysis contracted by an adult could affect the mind; and I have made this answer: anyone who says that anterior poliomyelitis, having a special affinity for parts of the spinal cord, could affect the mind, is guilty of slander. But it can indirectly affect the character, in that each of us has two universes; the primary universe is all that is contained within our skin envelope; the secondary, more remote universe is everything else. If any of us should suffer what seems to be utter catastrophe within his primary universe and by vigor, pertinacity and fortitude, overcome the essence of that catastrophe, then he must become endowed with a power and confidence to wrestle with, perhaps to solve, any problem of anxiety in the world outside himself.

By lifting themselves above their handicap the hard-of-hearing and all other apparently stricken people can raise themselves to a level greater than that which they were naturally destined to reach.

PART FOUR

PART FOUR might be called a sampler, because I have included various tests, reports, and papers—unique and valuable in themselves—and revealing some aspects which cannot be given in more detailed form because of space limitations. Certain duplications were inevitable, and I have not attempted to eliminate them. I preferred to present individual points of view, even though they might overlap, or contain repetitions.

The articles outlining the situation in regard to the hard-of-hearing in the armed forces are highly important. The Navy chapter, I wrote after a prolonged visit to the Philadelphia Naval Hospital—since the Navy is my favorite service. Indeed, during the course of the war, I have been privileged to do many pieces covering their activities. The Army and the Veterans Bureau are adequately represented. They have contributed official reports of their programs, in most cases signed by ranking officials, which provide an absorbing and authentic account of their rehabilitation methods.

I urge readers to view these scattered papers and the varied data on specialized phases of the subject as a whole. In following the development of some particular branch of work, we are too apt to lose sight of the entire vista and to say: "Marvelous, but of course it doesn't concern me." This mistaken attitude springs from our failure to realize that there is no such thing as an isolated improvement in aural technique. The world of hearing—like the world of nations—is one world. Eventually, whatever effects and helps a small group, will benefit all of us.

L. B.

ALTHOUGH the Navy has a chain of magnificent hospitals scattered throughout the country—only one—the Philadelphia Naval Hospital (in charge of Captain M. J. Aston (M.C.) U.S.N.R.) has up to date been designated as a rehabilitation center for the hard-of-hearing. Every Navy man in the Service sufficiently deafened to require intensive treatment is routed through here. Now an additional naval rehabilitation unit is proposed for the west coast.

Despite the emphasis on physical perfection demanded of the boys in blue, doctors have found that approximately 45 per cent of the patients already had their ears affected *before* they put on their uniforms. Most of these cases came in under the induction method, and were not sufficiently screened, a situation which speaks for itself on the difficulties of maintaining uniformly high standards for such an intangible sense as hearing. A very slight percentage were almost completely deafened as a result of meningitis. Heavy gun fire was responsible for much of the trouble. For concussion can kill off certain nerves in the inner ear, leaving the victims with 1/20 or 2/20 whispered voice hearing, which means they hear at one or two feet what normal ears perceive at twenty. And other hidden enemies include airplane noises, quinine and atabrine, and certain fevers, all of which can cause nerve deafness.

Up to the middle of January, 1945, about 600 graduates of Philadelphia Naval Hospital had passed their final exams, and approximately 240 patients were on their way toward a diploma! At present these boys are scattered through the wards with the blind and amputees, but within the year, they will be housed in the new Acoustic Clinic adjoining the hospital proper, which is now being rushed to completion.

Commander Francis L. Lederer (M.C.) U.S.N.R., in prewar days one of the outstanding faculty members in the Illinois College of Medicine, heads the otological division, and directs a crack crew of doctors, psychologists, speech and lip reading experts, therapeutists, and vocational advisers—many of whom are Wave officers—with distinguished records in civil life.

For it must be distinctly understood that the acoustically handicapped patients are not hospital cases in the usual sense of the word. They are not sent to Philadelphia for ear operations. They do not lie in bed, their heads swathed in bandages. If their hearing has, directly or indirectly, been damaged in action, all the more urgent medical treatment has already been administered . . . Philadelphia is the end of the road. They land there, usually on their way to an honorable discharge, apparently sound and healthy, but in varying degrees they are hard-of-hearing. And as every psychologist will tell you, a man who has suddenly lost his hearing frequently finds it harder to re-orient his life than the man who lost a leg.

First impressions are important to these bewildered men, and consequently, the hospital does its best to make them realize that they will be regarded as individuals rather than as numbers. On arrival, the Red Cross gives them a leaflet beginning: "You have been sent here because you are hard-of-hearing . . . The Aural Rehabilitation Unit of this Naval hospital is in existence for only one reason—to help you to adjust to your hearing loss in the best way known . . . The first few days you will go to many appointments, talk to many people. You may think you are being shoved around, and poked at, and asked a lot of silly questions. This is not so. To help you we need to know about you first-hand, and to know about you we have to examine you."

Imagine yourself a new entrant going the rounds. Following an orientation interview with a Red Cross worker, you will undergo a complete "survey." (1) An intensive ear, nose, and throat examination. (2) A personal interview, "so that we know what you like to do, want to work at, and how you get along in the world." (3) Testing by a psychometrist. (4) Vocational and educational service, "designed to help you get a new job or get back to school again." (5) An aural and speech screen, to determine how well you can hear and speech read, and whether your deafness has changed your voice or manner of speaking. (6) A hearing aid fitting, to select the exact aid best suited to

your needs, and finally (7) an assignment to a rehabilitation class—where you will take lessons in speech reading (otherwise known as lip reading), in speech, and in sound discrimination. Then, just as if you did not have enough to do, you will be enrolled in two collateral services: (1) occupational therapy—a shop course in various handicraft projects, and (2) physical training—because exercise is good for you, and the Navy wants you to keep in trim.

In the words of genial Captain J. Allen, formerly in charge of the hospital, "We set up two goals. (1) A long time objective, which the patient may not achieve. (2) A short term one, which he meets while here. Actually, the entire program is so finely conceived and executed, that the majority of patients eventually achieve both objectives."

Few outsiders, unless they have had personal experience with hearing difficulties, can appreciate with what thoroughness every single detail of rehabilitation is approached. Consider, for instance, the hearing aid fitting. The average civilian—regardless of his wealth—seldom receives the elaborate medical examination given every patient as a matter of course to fit him to the proper instrument. Attracted by advertising and clever promotion, the civilian visits a sales office takes an audiometric test there, and unless he is very strong-willed, is apt to buy an aid on the spot. He may compare two or three competing makes, but there he stops. Since the Navy furnishes an aid free of charge to any man whose loss is great enough to impair his speech reception—there is no sales pressure or commercial argument. All the approved models of every manufacturer are kept in stock at the hospital—and the patients are encouraged to try one after another—until they feel happy in their choice.

And after the patient has acquired his hearing aid, the real training begins. The civilian purchaser must content himself with a few minutes of superficial directions from the salesman, and an instruction book. Then he is left to familiarize himself with his acquisition as best he can—which usually takes months of trial and error. Indeed, many wearers never find out how to utilize their machines to the best advantage.

In the hospital, the men are given hour after hour of intensive classroom drill in *learning how to hear with a hearing aid,* and are graded on the results obtained. In small groups—usually about ten—they are taught all the tricks of use in every variety of situation. For example, the man must learn how to telephone, how to conduct an interview with a typewriter clattering at the next desk, how to follow a conversation with three or four people talking simultaneously in the same room, how to shut out background noises in the subway and at restaurants, how to listen to music or lectures, how to care for their instruments and batteries. By the time they manage to overcome these obstacles, they know how to manipulate an aid as well as you know how to use your own ears!

Sometimes a hearing aid literally brings a man back to life. The doctors tell of one sailor, deafened at Pearl Harbor, unable to hear anything since that fateful date. Day after day, he stretched out in his bunk, staring apathetically at the ceiling. Every effort to enlist his interest failed. When his fitting was completed, the slightest sound terrified him. He had forgotten the ordinary noises made by the closing of doors, the swish of clothing, the rustle of paper. The doctor left him alone in his office for a few minutes, and came back to find him crying. Looking out of the window, the boy pointed toward a chirping robin. "Don't mind me, Doc," he said apologetically, "I'm just a little haywire . . . it's a new world . . . I just heard that guy piping on the tree . . . You know—for three and a half years I've been watching the damn birds opening and closing their mouths—but nothing came out!"

During the first week in the hospital, a man falls into the hands of Vocational and Educational Service, under Lieutenant Francis O. Grubbs. Educational Service functions primarily to help a man determine what type of job he can best be fitted to fill and what type of additional training—if any—he will need to secure such a job. They correlate the various tests and interviews for an analysis of the man's abilities. Then, after he has been equipped with his hearing aid and has attained a certain proficiency in lip reading, auricular training, and speech correction, they really go into high gear. For the Philadelphia Naval Hospital has developed a unique program in the placement field.

One of the problems always encountered by vocational advisers in the past has been to bridge the gap between theory and practice. That is, they would test a man and find him adapted for a specific type of work. Then they would return him to his home town, to translate their findings into action. He would often obtain a position based on their recommendations, only to discover, too late, that he disliked the work or was temperamentally unfitted for it. For various intangible reasons, he might not fit into his new groove and might find himself high and dry.

To obviate these difficulties, the hospital authorities evolved a plan, in co-operation with representative Philadelphia businesses, whereby they send men out to various industries to observe and participate in an exploratory way. Thus the men can make sure, while still at the hospital, that the particular work suggested will be "right" for them subsequently. If they try their hand at something that does not seem to jell, they apply for a transfer to another industry, until by trial and error, they feel satisfied. If, on the other hand, they "shake down" smoothly into their new careers, it restores their self-confidence. Either way, it obviates the fear of the future, the question on every man's lips. "Doc says I'll make a good ————, but I wonder if I can get away with it?" They do get away with it, and eventually most of the patients, after their discharge, secure a satisfactory placement through the War Manpower Commission, rather than through any dependence on the Veterans' Administration.

Many men, without thinking further, take it for

granted they will return to their former positions. But if they have worked in noisy occupations before they entered the service, this may be highly undesirable. Frequently the doctors warn Educational Service that if a man goes back to a job which assaults his ear drums, he will endanger his remaining hearing. Needless to say, the authorities summon all their tact and persuasiveness to drown the howls of protest.

One Marine, in particular, gave the doctors a tough battle. He had been a prominent "sound effects" man in the movies, noted in Hollywood for his keen ears. Bewildered and heart-broken over his deafness, for weeks he refused to try a hearing aid. Finally, practically by force, they put one on. To his astonishment, he was so much helped that his whole disposition and attitude changed. He became co-operative—ready to talk about "possibilities." Sent as an observer to a Philadelphia radio studio to see if he could adapt himself to sound effects work there, he landed on the staff within a few weeks. Today, doctors regard his eventual return to Hollywood as a distinct possibility.

Another case, a Seabee about 40, was extremely discouraged. A married man with several children, he had worked all his life as foreman in a dye-stamping plant. The doctors warned him that the noise element there would endanger what little perception he had left. But he had never known any other job. "Better lose my hearing than starve," he complained. "I don't want to take my family back to the farm in Kansas and sponge on my parents." Educational Service found, however, that he had color and design aptitude, and tried him out at a linoleum factory. The company were so pleased with his work that they offered him a permanent job while he was still a patient at the hospital. Immediately after his discharge, they made him a foreman, at a slightly higher salary than he had ever earned. The man sent for his family and is now happily established in Philadelphia.

But few of these men could have made the grade on courage and hearing aids alone, without the background of their aural rehabilitation work, which represents another outstanding achievement of Philadelphia Naval Hospital. Lieutenant Miriam Pauls (jg), a speech and hearing therapist by profession, heads the Speech and Hearing Re-education Department. She and her colleagues have developed a program of teaching speech reading in record time. The system itself does not appear to be a new "invention," for the department's work is based on the Jena Method of speech reading. But the technique suggests "service speed up" courses in acquiring foreign languages. And many civilian experts believe that after the war, it promises to revolutionize the entire technique of teaching the deafened. For up to the present, proficiency in speech or lip reading has required an average minimum of 1½ years of study. Philadelphia Naval Hospital graduates its students in 8 weeks. Indeed, the entire speech reading procedure yields such immediate results, that uninformed outsiders regard it as a sleight-of-hand performance. On the contrary, methodology and psychology are quite sound, and readily apparent to the trained observers.

The work in the aural rehabilitation department illustrates one of the few differences in the Army and Navy projects. Ordinarily the two services pool information and methods, and follow almost identical techniques of procedure. But the Navy uses teachers with sound hearing and a broad background in general speech work. The Army, on the other hand, uses hard-of-hearing women as speech reading teachers, partly on the theory that it encourages the boys to think that the experts instructing them have been through the mill and consequently realize just how badly they feel.

While I was in Lieutenant Pauls' office, a fine-looking young sailor pleaded excitedly with her. "I tell you I gotta be there when he comes."

"But you've only been here two weeks," she protested.

"Yeah, but you've got another two weeks. You promised me a leave. You said if I could pass the test—"

"Calm down. I'll keep my promise. But you're pushing things too fast. You're not giving yourself enough time."

The boy turned on his heel, smiling happily. "Don't worry. I'll make the grade."

Lieutenant Pauls laughed at my mystified expression, and nodded toward the door. "There's a case for you. His wife's expecting a child in two weeks. He *knows* it'll be a boy. He's equally positive that he'll arrive talking a steady stream; he's afraid of missing his baby's first words if he's not there to hear them."

Using the expectant father as an object lesson to explain the success of the speed up program, Lieutenant Pauls stressed that her students were much more highly disciplined and motivated than the average student in civil life. "These boys learn quickly because of their inner drive—their compulsion to prove they can hold their own in the world."

Regardless of motivation and discipline, the system succeeds because it employs every psychological trick for capturing and holding the men's interest. Almost everyone, for instance, comes out with better articulation, because in acquiring lip reading he subconsciously develops better speech. Then, too, instead of putting the complete class through the same sprouts, special instruction is available for illiterates, or men below the 6th grade level.

But it is the new approach which vitalizes the subject. Aural rehabilitation, as customarily taught to civilians, begins in the "This is a cat" manner, with all sorts of rules as a daily dose. In the courses as presented at Philadelphia, the students jump into deep water on the first day. Naturally, as they acquire facility, they must digest the underlying principles, memorize the various tongue and lip positions, and learn to distinguish the correct "feel" and sound of consonants and vowels. Yet somehow, hours of waste motion and drudgery are eliminated.

Many of the classes resemble current event groups.

Form_____ Without Aid_____

With aid_____

DISCRIMINATION TEST ONE

AURAL REHABILITATION

U.S. NAVAL HOSPITAL, PHILA., PA.

Name_____ ___ Date_____

Hearing Aid_____ AC___ BC___ Ear Fitted_____

1.	2.	3.	4.	5.	6.
bale	bed	bite	cot	bore	bee
kale	dead	fight	dot	core	key
fail	fed	height	got	door	fee
gale	led	kite	hot	four	he
jail	Ned	might	lot	gore	me
mail	red	night	not	more	knee
pail	said	right	pot	four	tea
rail	shed	sight	rot	roar	sea
sail	Ted	tight	shot	shore	the
tale	led	white		tore	we

hack	seed	did	lobe	bub	a
had	siege	ditch	load	bud	aid
hag	seek	dig	loaf	buck	ache
ham	seal	Dick	loge	buff	age
hash	seen	dill	loam	bug	ale
hat	seep	din	lope	bun	ape
have	cease	dip	lower	bus	air
has	seat	dish	loathe	but	ace
	seethe			buzz	ate
	seas				

1. The cat broke its leg.
   calf

2. Put the papers on the file.
   pile.

3. He rode home yesterday.
   wrote

4. We got free tickets last night.
   three

5. This is my chair.
   share.

6. May I have some beans?
   peas?

7. Where is the pail?
   mail?

8. It's a bitter day.
   better

9. Father came home at
   eleven.
   seven.

10. Have you any hash?
    cash?

Controversial topics, such as the desirability of a hard peace, are purposely introduced. In the heat of argument, the men lose their self-consciousness and start an old-fashioned bull session. Various everyday life themes are dramatized, with the men and their Wave instructors playing the different roles. One lesson may involve a job interview, another a shopping tour, a third, calling on the girl friend. There are touches of comedy, such as demonstrating to a sailor with an Irish brogue that he can use his newly found knowledge to understand his German mother even when she speaks "Dutch." Obviously, the underlying purpose aims at giving the men the maximum essential vocabulary in the minimum possible time!

One of the main problems confronting any rehabilitation center is how to integrate the loose ends. A patient's mind tends to become fixed on his own particular difficulty . . .. his awkwardness in using an instrument; his bewilderment over speech reading; his inability to adapt himself overnight to a new line of work. Thus he puts an undue emphasis on certain courses or classes, forgetting that they are merely isolated pieces in a complete picture puzzle. To counteract this inclination to treat the parts rather than the whole, Philadelphia Naval Hospital channels its varied activities through the office of Lieutenant Herbert Koepp-Baker, the Director and Coordinator of Educational Functions. In simple language, his job lies in helping the man maintain a broad perspective.

Lieutenant Koepp-Baker, who in prewar days conducted a university speech and hearing clinic, stresses the need for research to determine what deafness actually does to people—what can be done to reduce its social and vocational penalties—to cancel its liabilities. Lip reading and hearing aids are not enough, unless various phases of sound mental hygiene can be brought to bear on a man for the purpose of adjusting him to the normal demands of living. To accomplish this aim, the Navy tries to make every man an expert on *his own* hearing loss.

Through Koepp-Baker, and his associates in Philadelphia Naval and various Army hospitals, the Services have evolved a constructive philosophy about hard-of-hearing cases which should apply equally to civilians. They believe, for instance, that technical data can be overemphasized, unless they are interpreted in relation to the patient's background. If two men both register a 70 decibel loss, it makes a great difference whether they are both ex-cooks, or whether one was a college professor and the other a longshoreman. Obviously, vocational advisers should not attempt to rebuild the future on a mere similarity in testing figures.

Ultimately, a man's attitude toward his handicap determines the real seriousness of it. The way he views his disability is important. The Navy preaches a healthy approach: "Take it on the nose and do business with your handicap. Don't run away from it and don't fight it. View it objectively. Acknowledge your defect. The more intelligently you deal with it—the better your adjustment."

The Navy views with suspicion the sentimental belief that suffering ennobles the character. According to one realistic observer, "if a man was a b.... when he went in, and he becomes deaf or blind, the chances are he will come out a deaf or blind b.... Similarly, if he was immature or emotionally unstable, he is still immature or emotionally unstable with his handicap." In other words, a man's success or failure is predicated on his entire personality and character—not on the physical state of his ears. As William James puts it, "a difference is only a difference when it makes a difference." The Navy emphasizes that too many men have allowed their ears to make a difference, and have consequently over-estimated the number of closed doors!

To assess the tangible and intangible services of a rehabilitation center in precise statements and statistics serves no useful purpose. In viewing our own problems, we hard-of-hearing civilians should be most concerned with the implications of the Navy formula for returning deafened men to the world of sound.

Much has been accomplished that must still be held confidential. But we know of improved mechanical devices such as "ear defenders" to protect the ears of military and industrial workers from concussion. Marvelously designed hearing aids—compact, powerful, with keen tone discrimination—have been successfully built in the laboratories for future mass production. New educational techniques for aural rehabilitation are being elaborated daily.

As yet the benefits are being reserved—and quite properly so—for the war casualties. No home front millionaire can obtain comparable service. Come peace—and the Navy will pass on these gains to the civilian world. Until then—if fate wills a man to become hard-of-hearing—he will be lucky if he wears a Navy uniform, for then he will learn that "a man is more than his ears."

Aural and Speech Rehabilitation Unit ROUTING SLIP
U. S. Naval Hospital
Philadelphia, Pa.

Name .....Rank .....
Date Admitted .....Ward .....
Diagnosis .....

This slip is your check-card and will be needed to get you started. DO NOT LOSE IT. At the last place you go it will be taken up and filed.

.....

1. Orientation Interview-Red Cross .....
2. Ear, Nose, Throat Examination .....
3. Personal Interview .....
4. Psychometrist .....
5. Vocational and Educational Service .....
6. Aural and Speech Screen .....
7. Hearing Aid Fitting .....
8. Assignment to Rehabilitation Classes .....

COLLATERAL SERVICES

1. Occupational Therapy .....
2. Physical Training .....

APPROVED:

.....

CHIEF OF AURAL REHABILITATION SERVICE

The Veterans Administration

BY BRIG. GEN. FRANK T. HINES

Former Administrator of Veterans Affairs and Administrator of Retraining and Re-employment

A VETERAN who has a service-connected disability that resulted in the impairment of his hearing may be entitled to every benefit that has been provided by law for veterans who have suffered all other types of service-connected disabilities. The law makes no differentiation whatever between an injury to the ear and one to any other part of the body.

These benefits include the payment of a pension based on the degree of disability, hospitalization, domiciliary and medical care, wherever they are indicated, together with any appliances or aids, and vocational rehabilitation, where these are required to overcome such handicap.

A veteran who has suffered an impairment of his hearing as a result of a nonservice-connected disability is not entitled to all of these benefits. He may be hospitalized, as this service is available to all veterans under certain conditions. But while hospitalized he may not be supplied with hearing aids or other prosthetic appliances.

Under certain conditions, if he is in need of attention but not of hospitalization, he may be admitted to a domiciliary facility. While in one of these homes, if it is discovered that his condition can be alleviated through the use of a hearing aid, one may be supplied.

Assuming that the hearing of the veteran was impaired as a result of a service-connected disability, he would be allowed a pension in proportion to the degree of his disability. This pension ranges from $11.50 a month for a 10 per cent disability, to $115 a month for a total disability. The pension is established by a Veterans Administration Rating Board after consideration of all facts related to the case. All the veteran needs to do in connection with securing this pension is to file a claim stating his condition, together with evidence that the condition exists and is the result of service in the armed forces. This claim is filed with the Veterans Administration. It may be filed at the time of discharge or at whatever time the veteran may desire, no matter how long his separation from the service may have been.

Upon receipt of his application, all evidence in the case will be considered by the Board, and a pension granted if the injury is found to have resulted from or been aggravated by service in the armed forces.

If a pension is allowed, it will be payable monthly for the rest of the veteran's life, or as long as the condition continues.

Should the need of hospitalization be evidenced, the veteran will be admitted to a Veterans Administration hospital where he will receive any and all medical and surgical services indicated by his condition. Whenever necessary, consultants and specialists will be called in for consultation or treatment.

Should an emergency develop which precludes the removal of a veteran, with a service-connected disability, to a Veterans Administration hospital he will be admitted to a civilian hospital; if necessary, to one concentrating in his particular disability.

If the impairment to his hearing continues after hospitalization and treatment, or if it is determined that hospitalization will not benefit the veteran, and a hearing aid is desirable, one will be supplied by the Government at no expense to the veteran himself.

Should his disability be found to be sufficient in degree, and he is a veteran of World War II, the law provides for him to receive training of any kind that is found necessary to re-establish his employability or to restore his usefulness.

This would, or could, include courses in lip reading and/or training for work in which his limited hearing would not constitute a handicap or in which the handicap would be reduced to a minimum.

The benefits made available through the Veterans Administration are open to all veterans in the degree that their disabilities meet the requirements established by law. These requirements have no relation whatever to any grade or rank the veteran may have held during his service. A Private and a General have identical rights insofar as hospitalization, appliances, and training, are concerned. The only considerations are whether or not the man meets the legal requirements and is in need of the service.

No method has been established by which the Veterans Administration can lend money to a veteran to buy a hearing aid or any other appliances. If the veteran qualifies, the appliance is supplied, otherwise the Veterans Administration can do nothing about it. It is not a lending agency and has no authority to make loans for any purpose.

If a veteran establishes the fact that he has a service-connected disability, his rights to benefits through the Veterans Administration continue as long as he has the service-connected disability.

He may be hospitalized at any time either because his service-connected disability indicates the need for it, or because of other conditions having no relation to his service.

No limit has been established on the time in which a veteran may file a claim for a service-connected disability. It is, however, obvious that the earlier the claim is filed the simpler it will be for the veteran to produce evidence that it is service-connected.

With the passage of time, doctors who treated the case in service, and companions who had knowledge of the conditions under which the disability occurred die or move to new places where it is difficult to locate them, papers become lost, and memories become cloudy. It is therefore desirable that claims be filed as promptly as possible.

Taking Care of the Veteran

BY EDWARD McE. LEWIS

Director, Press Relations, Veterans Administration

Jonathan Humbridge was one of 12 men moving up behind one of the famous hedge-rows of France. Enemy fire was heavy and the going more than a little rugged. As often happens at time like this the men were bunching up in violation of the teachings of both textbooks and experience. Jonnie Humbridge noticed this and dropped back calling to the others to spread out. Maybe this is the reason he is not now resting in French soil.

Just as Jonnie called out, a big one burst almost in the middle of the group. He was caught up in the vortex of a tornado of sound and confusion. Jonnie knew nothing.

Sometime later he awoke. He was lying in the bottom of a shell hole. How he got there, how long he had been there, or what had happened he didn't know. Jonnie wasn't very sure about anything. The war seemed to have withdrawn from him. Instead of the deafening explosions and confusion of noises that make up a war, the whole world was muted . . . all sounds seemed blanketed in distance.

Jonnie was picked up, wandering around the battlefield in a half-dazed condition and carried to an advance aidpost. Here it was found his ears had suffered irreparable injury. He wasn't deaf. He could still hear loud noises in a dim and distant sort of way. But the explosion that picked him up in the air and slammed him into the shell hole had so damaged his hearing he would probably never again enjoy the little noises that make up life, or take part in a normal conversation without the help of a hearing aid.

The doctors thought Jonnie's hearing would improve some with time but he would never again listen to the song of birds, and the sounds of normal living would always be heard as if behind a blanket of fog.

After months in hospitals Jonnie was discharged. He left the hospital with an honorable discharge for a disability received in line of duty. His pension was fixed up and he would get a monthly allowance for life. There was a little gadget on his chest that made it possible for him to hear fairly well. Jonnie understood the little gadget pretty thoroughly. It was something like a radio and he knew radios. What little work experience he had before entering service had been with a broadcasting company.

Jonnie went home and rested. He looked around for a job but soon found there was no place in his old work for a man who couldn't hear. He didn't want to lie around on the hearth for the rest of his life chewing on a pension. He was young and well and wanted a chance to work, even to make a name for himself.

Denied these he began to draw into himself. To keep away from others . . . it wasn't much fun running around with a lot of people anyway when you didn't know half of what was going on.

About now he remembered the notice he had got from the Veterans Administration about the same time they told him of his pension allowance. It said he was entitled to "vocational training." At the time he had paid no attention to it, having been only interested in getting back home and in the swing again. Now he remembered it, and wrote the Bureau asking what they could do for him.

This letter was the beginning of a new life for Jonnie . . . one that will eventually set him up on a basis where he may compete with any and all comers.

In answer to his letter, the Veterans Administration told Jonnie to go to a university in a nearby town and report to a doctor who was heading a group known as a vocational guidance council. This group made up of doctors, professors, and specialists in rehabilitating the handicapped would study his problem and help him to start on a course that would give him a chance in new work where his hearing would not be of first importance.

From them he was referred to specialists who would consider his case and see if anything could be done by medical science to improve his hearing.

Careful scrutiny of his background, investigation of his interests and aptitude tests showed that while Jonnie had previously been in the broadcasting end of radio, his real interest lay in the mechanics of the business. He was enrolled in a university where he is now taking electrical engineering.

Upon completion of this course, he will be found a job, probably in an electrical laboratory, where his impaired hearing will not be a handicap to his advancement in his profession.

Meanwhile Jonnie Humbridge has been thoroughly informed of his rights under laws administered by the Veterans Administration which establish benefits for veterans. Should his ears, at any time in the future, cause trouble, he will be entitled to hospitalization at a Veterans Administration hospital, or to out-patient treatment if hospitalization is unnecessary.

And he knows that his hearing device will be kept in working order, or a new one supplied for as long as he lives.

If he ever needs hospitalization because of conditions having no connection with his service-disability, he knows that he may be admitted to a Veterans Administration hospital where he will receive every attention that could be had in the best private institutions.

Jonnie Humbridge is one of approximately 35,000 veterans who are partially deaf as a result of service in World War II and are receiving pensions because of this disability. There are already 73 others who are being occupationally trained because their deafness has been found to constitute a vocational handicap.

Those who are training for new vocations because of this service-connected disability are paid pensions of $92 a month while being trained if they have no dependents. If they are married an additional $11.50 a month is paid, and the same amount is allowed if the veteran has a dependent parent. For each child an allowance of $5.75 a month is paid.

Other veterans who have been discharged because of impaired hearing, but are not entitled to training because of a vocational handicap are taking advantage of the educational sections of the G. I. Bill of Rights. Under this law most of them may go to school up to one year and many may receive additional education, for a period as great as the length of their active service. This education may be of any type the veteran selects and is not limited to formal or academic courses. While in school they are paid $50 a month if single and $75 a month if they have dependents.

Under this law these veterans may also borrow money for a home, a farm or a business and get the Government, through the Veterans Administration, to guarantee repayment of as much as $2,000 or 50 per cent of the amount borrowed.

Their government insurance, of course, may be continued but to keep this protection beyond the period covered by the present term policy the veteran must convert the insurance to a more permanent form. In paying premiums on this insurance he may either remit to the Veterans Administration by check or money order, made payable to the Treasurer of the United States or he may arrange to have premium payments deducted from his monthly pension.

The Army Program for the Deafened

Before the war had been in progress very long, it became evident to the Surgeon General of the United States Army that the soldier with impaired hearing could not wait to be rehabilitated by the Veterans Administration after his discharge from the Army.

In the first place, many soldiers who had suffered damage to their hearing could be returned to duty if they were rehabilitated. (In fact more than 50 per cent of them have been returned to duty.)

In the second place, impaired hearing was often associated with wounds which required long periods of hospitalization. Or the onset of deafness was coincident with convalescence from severe medical illness that confined the patient in a hospital for a long time.

It seemed only logical, therefore, to start rehabilitative measures early—both to restore the patient's confidence and optimism, and to shorten the period of reorientation and training. Accordingly, in the spring of 1943 a War Department directive was issued outlining the policy for the special care to be given these patients.

Full vocational rehabilitation still remains the function of the Veterans Administration. But rehabilitation for the deafened soldier now begins in an Army hospital.

At present, there are three general hospitals designated for the special treatment of the deafened: Deshon General Hospital at Butler, Pa., Borden General Hospital at Chickasha, Okla., and Hoff General Hospital at Santa Barbara, Calif. At these three hospitals the Army Medical Department has gathered together leading ear specialists, the best and latest equipment for the measurement of hearing, the finest hearing aids, acoustic physicists and acoustic technicians, psychologists and the best trained instructors in speech correction, hearing training and lip reading.

As a result, the deafened soldier benefits from a program which is far superior to any now offered in civilian life. It is a program which will probably have far-reaching effects after the war on the treatment and training of civilians who have impaired hearing.

Outside of the advances made in chemotherapy (the use of the sulfa drugs and penicillin to combat infection) no startling advance has been made in the medical program. Ear surgery, as performed in Army hospitals, represents the most skilled techniques but there have been no new developments in this field.

The real advance in the care of the deafened lies in the earlier and more accurate detection of the impairment through electro-acoustical means . . . in determining and fitting the hearing aid which is best for the individual . . . and in the type of training given, both in hearing and in speaking.

More than anything else, the soldier who has been suddenly deafened, wants to hear again. With this in mind, the Army tests him for a hearing aid as soon as possible after his arrival at the special treatment center.

First he is given an audiometric test for hearing pure tones. The audiometer, as its name implies, is a machine for measuring hearing capacity. At the time this test is made the patient is also given a whispered and low conversational voice test. Next comes a test, using special electro-acoustical equipment, to scientifically determine his loss of hearing for speech. The decision as to whether a hearing aid would help the patient is usually based on this speech reception test.

When the loss of hearing is 40 decibels or more, patients may be expected to benefit from an aid. When the loss is less than 40 decibels the audiogram (the record made by the audiometer) is studied before a decision is made.

If it is apparent that a hearing aid will prove helpful, an impression is promptly taken for custom-fitted ear pieces. The Army stresses the value of having these ear pieces fit snugly and correctly, as the performance of the hearing aid will depend to some extent on their fit.

The ear pieces, incidentally, are made of plastic and manufactured in the hospital laboratory to save delay.

The task of selecting a hearing aid for any individual is far from simple. In civilian life a person who is hard-of-hearing visits a commercial firm or two and is guided by their tests. The Army not only gives far more thoroughgoing tests than are possible commercially, but each of the three hospitals specializing in the treatment of the deaf keeps a stock of all acceptable types of commercially made hearing aids.

The next step is to narrow down the choice of an aid as much as possible from a range of potential fittings which extends into the hundreds. First selections are on the basis of the audiometric, speech reception and speech discrimination tests and the medical diagnosis. A theoretical setting is determined for each instrument selected and this is checked by a technician who tests and adjusts it on the patient.

The revised instruments are then loaned to the patient, one at a time. He gives each a trial of several days, wearing the aid in and around the hospital and while on pass. The hearing aids selected by the patient as those which proved best for him in everyday situations are then subjected to further evaluation tests, using the electrical measuring equipment. Final selection is based on the results of these scientific electro-acoustical tests, and the identical aid which proved best by test is issued to the patient.

A great deal is being learned through the data being collected by the Army in connection with these tests. This research will probably result in improved hearing aids in the future as well as improved methods of fitting them.

But the fitting of a hearing aid by the most advanced scientific methods is only part of the Army's program for the deafened.

There are clinical psychologists to help orient, guide and counsel these patients. The disturbing effect of deafness on the personality has long been recognized—the more sensitive and intelligent a person is, the more he is apt to withdraw within himself. The Army medical program therefore recognizes the importance of early contact to instill optimism and acquaint the patient with the opportunities for retraining.

There are classes in lip reading, and individual instruction. Recognized methods are used but the scope of the material is varied to conform to the interests of the patient. Teachers are rotated and the groups prepare material for each other so all are exposed to individual variations of speech.

More than two hundred teachers of lip reading are now employed by the Army; the course has been streamlined to two months; and it is geared to the adult mind.

The speech of the patients themselves is closely watched for defects and preventive measures are taken to guard against speech and voice deterioration. When remedial training is necessary, the patient is made aware of his particular difficulty through individual instruction and taught to recognize his errors. Intensive ear training is given and finally the patient practices in group classes and the new speech element is established.

All patients who receive hearing aids are required to take specific training in the interpretation of sounds. In other words, they must learn how to use their hearing aids for best results. There are lessons in sound discrimination to distinguish pitch, intensity and quality of various sounds; to place the source of everyday sounds; and speech discrimination to avoid confusion between such words as coast and coat, and less, last, lasts.

In addition to this rehabilitative training, the patient is offered academic courses which lead to a degree on their completion, and basic courses which lead either to specialist work on return to duty or vocational training by the Veterans Administration if discharged to civilian life.

And all the time the patient is in the hospital he is undergoing physical reconditioning and occupational therapy.

As a result of this forward-looking, well-rounded program, the Army Medical Department has successfully rehabilitated over 3,000 soldiers suffering from impaired hearing.

Report from an Army General Hospital on Testing for Hearing Aids

A. TESTING-AUDIOMETRY

Each patient is routinely given three audiometric tests. The first is administered normally within 48 hours after admission. The second is given at the end of the first month and the third about one week before disposition. When indicated, additional tests are given during his period of hospitalization, occasionally as many as six in number. These tests are given with the Maico D5 audiometer in accordance with the ascending threshold method advocated by Hughson and Westlake. Thresholds for air conduction are determined first, then threshold for bone conduction. To insure standardization, all testers follow details of the procedure carefully.

In accordance with Army standards of hearing testing, whispered and low conversational voice tests are administered concurrently with each audiometric

study. During the final test the patient's response with his hearing aid is measured by directly coupling the aid to the audiometer receiver. In addition each patient is tested by low conversation with his hearing aid, again conforming to Army methods.

B. TESTING-SPEECH RECEPTION

Immediately after admission to the hospital each patient is given a test to determine in decibels, his loss of hearing for speech. The patient is placed at a specified point in an acoustically treated room with a high fidelity iconic loud speaker across the room. In another room, the examiner speaks into a microphone, the intensity of his voice being maintained at a uniform level with the assistance of a volt meter. By carefully measured attenuation of the speech that is transmitted through the loud speakers, the tester is able to determine the patient's threshold in decibels, and comparing this with the normal, the loss for speech is recorded.

The measure of speech reception is a valuable supplement to the audiogram. It has been found that the loss for speech is very nearly equal to the average decibel loss in the speech range (256-2048) for pure tones. If the discrepancy is large, both tests are immediately repeated and studied for malingering or central deafness. If these are ruled out, special consideration in selecting a hearing aid is given. For example, occasionally a patient will show an average loss of 90 decibels for pure tones, but only 55 for speech. Severe tinnitus is usually associated with these findings. It is evident that the selection of a "strong" hearing aid on the basis of audiometric findings would be uncomfortable, only moderate power being necessary to receive speech. On the other hand, a case showing reverse conditions is a subject for study by the psychologist.

The decision for making ear molds is ordinarily based on the speech reception test. When the loss of speech is 40 decibels or more, impressions are taken immediately since patients with losses at or above this level may be expected to benefit from a hearing aid. When the loss is less than 40 decibels, the audiogram is studied before a decision is made.

The task of selecting a hearing aid for any individual is far from simple. In the first place, our knowledge of what constitutes an acceptable hearing aid fit is fragmentary, because most of our information on the psychophysics of audition is derived from studies on normal listeners and the tremendous variations in function attendant upon hearing loss have been, for the most part, disregarded. Moreover, the pure tone audiometer, while of definite value, has been sorely over-emphasized in the measurement of hearing function. The excellence of any hearing aid fitting depends upon the adequacy with which it gives the patient normal supra-threshold perception. Pending the compilation of data and the codification of underlying principles, a practical method of testing each patient with many hearing aids seems to be the only feasible method today of finding the best fit for that patient. A problem which appears frequently illustrates the need for knowledge of supra-threshold phenomena. Lowering of the pain threshold does not bear a simple relation to the amount or pattern of hearing loss and two patients with almost identical audiograms may vary tremendously in their ability to tolerate the same hearing aid. Moreover, some patients have serious disturbances in pitch-perception. Under this condition compensation for loss of acuity is meaningless since speech is confused.

The methods used for the selection of a hearing aid are based on the premise that each patient presents a special case. The kind and character of hearing loss, the medical prognosis, and the psychological adjustment to the auditory handicap, combine to create an unique set of needs, which can be met most completely by searching for the particular aid to compensate for the deficiency. There is no single type or make of instrument which, in the abstract, is best.

The program for fitting hearing aids consists of a series of steps, each with a definite purpose. The aim has been to institute a thorough and practical system and at the same time better the entire system through a process of evolution. At the present time, ten council-accepted hearing aids are made available to the patients. Bearing in mind the various models of some of the instruments, the range of possible fittings extends into the hundreds.

Step No. 1.

The ultimate in the selection of an aid is to be able to perform certain examinations and then write a prescription for the patient. This step is an approach in that direction. On the basis of the audiometric, speech reception and speech discrimination tests along with the medical diagnosis, a theoretical model and setting of each make of instrument is determined. This narrows the field to ten instruments.

Step No. 2.

To confirm the theoretical fitting, each patient is closeted with a technician who gives gross tests and makes appropriate changes for each instrument.

Step No. 3.

The revised instruments are then transferred to the hearing aid library through which the patient is loaned the specific instruments previously selected for him. These may be tried for a period of 48 hours in and about the hospital and while on pass. It is his task to select the three or four instruments which serve him best in the various everyday situations. To this end he is given, in advance, careful instruction on the degree and type of compensation to expect and on the criteria upon which to base his opinions. It takes him about two and one-half weeks to try all instruments. This system not only exposes each instrument to the patient for criticism, but it gives the patient an opportunity to realize the limitations of hearing aid compensation. Moreover, a period of adjustment to wearing such an instrument is thereby given. Generally, he has a basis for appreciating the superior

performance of the instrument that is finally selected for him.

Step No. 4.

The three or four instruments thus selected are then subjected to final hearing aid evaluation tests. The apparatus used is the same as for speech reception testing and compares the capacities of each instrument to transmit the spoken voice to the ear. The loss for speech is again determined without an aid using the Psycho-Acoustic spondee list and then with the aid. The proximity to the normal threshold and the gain for the instrument are determined. Speech is then increased until discomfort is produced beyond which point an aid may be considered ineffective. The tolerance limit is thereby established. From these two, that is, the threshold level and tolerance limit, the dynamic range (the range of speech intensities that the aid will handle) is computed. The greater the range, the more practical is the instrument. The next measure is the tolerance for background noise, which takes cognizance of the fact that in everyday stiuations speech is heard against such a background. Static is chosen because the average intensity can easily be controlled, yet it consists of a complete mixture of noise tones that are random and pulsating. The static is introduced into the test chamber simultaneously with the spondee material and the intensity increased rela tive to the speech until understanding of speech is disturbed. The hearing aid which allows for the greatest intensity of static is most practical. One of the most disturbing elements in hearing aid comparison is the controlling of instrument volume because of the differences in taper and deviations in frequency response of different instruments. Simple arbitrary setting of controls defeats the purpose of this scientific venture. A method has been devised in this clinic for obtaining equivalent use setting. As already indicated pure tone measures are used to supplement speech reception in special cases. The tones are fed into the testing chamber at controlled intensensities and the threshold, tolerance limit, gain and dynamic range, are calculated. Under special circumstances consonant discrimination test is also administered in the sound chamber. These are transmitted through the medium of recordings used in the Northwestern University Speech Recognition tests.

The final selection of a hearing aid is made on the basis of the above tests. The one performing best is the one chosen, and if more than one instrument gives equally good results (rarely the case) the patient may choose the one he prefers. The findings of all studies are related to the patient. It is our experience that the insight thus gained significantly promotes the patient's adjustment to his instrument.

Audiometric Test, Department of Aural Rehabilitation, U S N H, Philadelphia

Auditory Training, Group instruction in use of Hearing Aid, Department of Aural Rehabilitation, U S N H, Philadelphia

Hearing Aids Accepted by the Council on Physical Medicine of the American Medical Association

Coronation Acousticon Hearing Aid ..... JAMA 111:25 (July 2) 1938 (carbon)
Acousticon Hearing Aid, Gold Medal Model ..... JAMA 115:216 (July 20) 1940 (carbon)
Acousticon, Model A-45 ..... JAMA 117:1978 (Dec. 6) 1941 (tube)
Acousticon, Model A-55 ..... JAMA 120:839 (Nov. 14) 1942 (tube)
Mfr. Dictograph Sales Corp., 580 Fifth Ave., New York City
Aurex Hearing Aid (Semi-Portable) ..... JAMA 109:585 (Aug. 21) 1937 (tube)
Aurex Model C-B and Model C-A Hearing Aid ..... JAMA 120:535 (Oct. 17) 1942 (tube)
Mfr., Aurex Corporation, 1117 No. Franklin Street, Chicago, Illinois
Beltone Hearing Aid, Model 603H ..... JAMA 124:1059 (Apr. 8) 1944 (tube)
Mfr. Beltone Hearing Aid Co., 847 W. Jackson Blvd., Chicago, Illinois
Gem Hearing Aid, Model V-4, C-186 ..... JAMA 120:1397 (Dec. 26) 1942 (tube)
Mfr. Gem Ear Phone Company, 47 West 34th Street, New York City
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Mfr. Maico Company, Inc., 2632-36 Nicollet Ave., Minneapolis, Min.
Mears Aurophone, No. 98 ..... JAMA 118:978 (Mar. 21) 1942 (tube)
Mfr. Mears Radio Hearing Device Corporation, 1 West 34th Street, New York City
Otarion, Model A-1 ..... JAMA 115:1101 (Sept. 28) 1940 (tube)
Otarion Model A-2 ..... Report not yet published
Mfr. Otarion, Inc., 448 N. Wells Street, Chicago, Illinois
Radioear, Model B-20 ..... JAMA 110:1753 (May 21) 1938 (carbon)
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Radioear Special Electronic Type C Hearing Aid ..... JAMA 116:2018 (May 3) 1941 (tube)
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Ravox Hearing Aid (Semi-Portable) ..... JAMA 113:1643 (Oct. 28) 1939 (tube)
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Mfr. Zenith Radio Corp., 6001 Dickens Ave., Chicago. Illinois
Sonotone Audicles #530, #531 and #533 ..... JAMA 123:837 (Nov. 27) 1943 (tube)
Mfr. Sonotone Corporation, Elmsford, New York
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Telex Hearing Aid, Model 900 ..... JAMA 117:1978 (Dec. 6) 1941 (tube)
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Mfr. Telex Products Company, 1645 Hennepin Ave., Minneapolis, Minnesota
Vacolite Model D Hearing Aid ..... JAMA 118:896 (Mar. 14) 1942 (tube)
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Western Electric Ortho-tronic Audiphone ..... JAMA 121:1283 (Apr. 17) 1943 (tube)
Mfr. Western Electric Company, 300 Central Ave., Kearny, New Jersey.

AUDIOMETERS ACCEPTED

Maico Audiometer, Model D-5 ..... JAMA 114:139 (Jan. 13) 1940
Maico Audiometer, Model D-8 ..... JAMA 120:205 (Sept. 19) 1942
Mfr. Maico Company, Inc., 2632-36 Nicollet Ave., Minneapolis, Minnesota
Sonotone Audiometer, Model 20 ..... JAMA 124:94 (Jan. 8) 1944
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Method of Rating the Performance of Hearing Aids

BY HARVEY FLETCHER, PH.D.

THE RATING of the performance of hearing aids is an extensive subject, only one particular phase of which can be reported on here.

Not only are persons who use hearing aids interested in finding the particular ones which will aid them, but in many cases, when representing a local society for the hard-of-hearing, they are asked to assist someone else in the selection of a hearing aid.

In most cases they rely on their own experiences and hence they may be influenced in favor of a set which gives them personal satisfaction but which may be unsuited to the prospective user.

In selection of a hearing aid, two considerations arise.

1. The extent to which the apparatus assists the user in interpreting speech.
2. The convenience of use as determined by size, weight, appearance, ease of maintenance and the like.

It is not possible to say how these two factors should be weighed in the final choice. It is obvious that a person who could hear with only one of a number of sets would have to select that one if he wanted any, and could not consider the matter of convenience. On the other hand, the convenience of use would be uppermost in the mind of some one who could hear easily on several types of apparatus.

Experience with hearing aids has made those at the societies well qualified to advise a person with regard to the convenience of a hearing aid, the maintenance, ruggedness, ease of obtaining repairs, etc. To determine the relative aid in interpreting speech resulting from the various hearing aids, it is recommended that a test be made as here outlined.

The test consists in determining the percentage of vowel sounds which may be interpreted with the hearing aid and, similarly, the percentage of consonant sounds. These two factors are definitely related to the extent to which speech may be interpreted. The person assisting in the test first carries on a conversation with the user of the set until a proper sound volume is selected by manipulation of the controls. The test then proceeds. Simple words are pronounced very slowly at a fixed distance from the hearing aid: for example, bat, bait, bet, beat, bit, bite, etc., the only change being the vowel sound. The test for consonants is made by using such words as by, die, high, lie, my, pie, etc., the same vowel being used with different consonants. The user of the set records the sounds and the correct percentage is determined at the conclusion of the test.

VOWELS:

bike, bat, bite, boot, beat, boat, bake, buck, bout, bit, book, bait, but, bout, bit, book, back, balk, back, bike, boot, bet, bought, bat, bite, boot, beak, boat, bake, buck, bout, beat, boat, bait, but, bout, bit, book, beck, balk, bake, bit, book, bet, bought, back, bite, boot, beak, boat.

CONSONANTS:

vie, by, high, wing, thy, wiz, wig, win, shy, why, wish, which, wick, pie, thigh, by, high, wing, thy, wiz, with, die, lie, wry, tie, which, wick, pie, thigh, whiff, thigh, fie, my, sigh, vie, die, will, wry, tie, whip, wit, guy, nigh, shy, why, fie, whim, sigh, vie, sigh.

To obtain a figure of merit for the hearing aid, it is only necessary to multiply the vowel percentage by the consonant percentage and again multiply this by the consonant percentage. For example, the figure of merit of a set having a vowel percentage of 80 and a consonant percentage of 60 would be $.80 \times .60 \times .60 = .29$. Due to the greater contribution of the consonants to the intelligibility, it is necessary that they be given greater weight in determining the figure of merit. This accounts for the double appearance of the consonant articulation in the formula.

This method has been used experimentally and has been found to be a simple, reliable method of rating the performance of hearing aids. If the societies keep a record of the findings of each test, a very valuable store of data will gradually be accumulated indicating the performance of the apparatus on the market in aiding the hearing of people of widely different degrees and characteristics of hearing ability.

METHOD OF TEST

The tabulated words should be typed on cards in order that by shuffling the cards a new word order may be obtained for each test.

The words should be pronounced at a fixed distance (possibly 3 feet) from each hearing aid, the voice being natural and maintained at the same speech volume throughout the tests. Sufficient time should be given the observer to record the word before the next one is pronounced.

In testing the vowels, only the vowel part of the word is considered. If "bat" were pronounced and "hat" recorded, it would be considerd correct since the vowel was correct. Similarly, when considering the consonants the correction is based only on the significant consonant. If "high" were pronounced and "hay" recorded, it would be considered correct. Since some of the words have two consonant sounds, as in "which," it is advisable to indicate on the card the significant consonant, in this case *ch*, so that it may be referred to in the correction of the recorded words.

"Words and Music"

HOW TO CONDUCT A COMPARATIVE TEST RIGHT IN YOUR OWN HOME TO DETERMINE THE BEST HEARING AID FOR YOURSELF.

Reprinted from the Auditory Outlook with Revisions based on findings of the Bell Telephone Laboratories

Words and Music sounds like the title of a smart musical comedy, instead of the caption for a scientific booklet. And yet, simple though it may appear, the booklet has a unique importance. So far as I know, it presents the only comparative test which can be taken right in your own home, to determine the best hearing aid for yourself. An experiment which helps the deafened to select the instrument best fitted for their needs may seem absurdly simple. Actually, the scientists of the Bell Telephone Company put a great deal of time and money into solving the problem. If much of the modern equipment for measuring hearing losses is unavailable to you, *Words and Music* can be used, quite satisfactorally, in its place.

In fact, throughout the entire book, I have scattered tests of every variety. Not that I expect you to swallow them complete, or to understand them in full. But I do think you will find it helpful to have some idea of what they are like. Besides, they have one great advantage. If you live in a small community, testing facilities are apt to be limited. And in a large city, it is often time-consuming, and not too cheap, to have the experts put you through the paces. The majority of the tests included in this volume can be taken at your convenience with the aid and co-operation of relatives and friends. Even though they may lack the finished skill of professional testers, they can, in most instances, serve you adequately as amateur substitutes. L. B.

Most people know that sounds—words, music, or noise—are brought to our ears by means of vibrations. The average normal ear can hear sounds caused by vibrations as low in frequency as 20 cycles (complete vibrations) per second, and as high as 20,000 cycles per second. Ninety-nine per cent of the energy of the sounds of English speech lies between 80 cycles and 8,000 cycles per second.

Few people realize how minute is the energy of ordinary speech. If 50,000 people all talked at once and each talked as loudly as possible, the total power produced in the form of sound would be just enough, if transformed into electrical power, to light one ordinary 50-watt Mazda lamp.

OVERTONES IMPORTANT

Practically none of the ordinary sounds that we hear are pure. Almost every sound has overtones associated with it. These overtones may be harmonic or inharmonic. The harmonic overtones are those whose frequencies are exact multiples of the frequencies of the fundamental tones. Inharmonic overtones may be of any frequency higher than, but not exact multiples of, the fundamental. In music, the overtones are ordinarily harmonic. In other words, if you play a musical note whose fundamental frequency is 256 cycles per second, its first overtone will have a frequency of 512 cycles per second, its second overtone will have a frequency of 768 cycles per second, its third overtone will have a frequency of 1,024 cycles per second, etc. The fundamental sound establishes the pitch of any given note. The number and relative intensity of the overtones determine the timbre or quality of the sound. It is the number and relative intensities of the overtones that make it possible to distinguish between middle C on a cello, a violin, or a cornet.

The lowest notes of some organs are below 20 cycles per second and are felt rather than heard. The overtones of these low tones, being two, three, or more times the frequency of the fundamental, can be heard. On the other hand, most of the overtones of the highest notes of the flute, piccolo, and violin are probably above the upper frequency limit of audibility.

In speech, the fundamental frequency of the vowel sounds determines the pitch of the voice. The overtones determine the quality of the voice. Both harmonic and inharmonic overtones are found in speech.

The hard-of-hearing are interested in the pitch and quality of the speaker's voice, but they are far more interested in how much they can understand of what the voice says. Most of the hard-of-hearing have, at one time or another, tried some aid to their hearing. Hundreds of thousands of the hard-of-hearing use these aids constantly.

Hearing aids are usually selected in one of two ways. The first one is often bought on the recommendation of a friend who says that some particular instrument is the best in the world. After some little experience the user generally realizes that "one man's meat is another man's poison" and the next time he buys a hearing aid, he tries several and chooses the one that sounds best to him.

EASY TO CHOOSE UNWISELY

Strangely enough, in hearing aids, it has been found that the average individual often mistakes the poison for the meat, and chooses an instrument which does not give him the best possible results in the understanding of what is said. The reasons for this are, perhaps, a little obscure, but the writer believes that in most cases it is due to the fact that hearing aids are frequently chosen either because they sound smooth and pleasant or because they give an impression of great loudness. Unfortunately, the smoothness of the sounds transmitted by a hearing aid to the user's ear seems to depend somewhat upon the *in*efficiency with which the higher pitched sounds are transmitted. This is probably partially due to the fact that many of the unpleasant noises in which the person with normal hear-

ing is continually immersed are high pitched. Such noises as the crackling of wrapping paper, the scraping of chairs on a floor, the squeak of chalk on a blackboard, and the screech of wheels on rails when a street car rounds a curve, are examples of this kind of noise. It is also a fact that the higher pitched sounds and overtones of speech are less pleasing than the lower pitched sounds. For example, the sound of "a" in "father" is pleasanter than the sound of "ch" in "chew." Most of the energy in the first sound is below 1,000 cycles per second. Most of the energy in the second sound is above 2,500 cycles per second.

An impression of great loudness may be created by a hearing aid which is efficient at one particular frequency even though it is quite inefficient in amplifying higher or lower pitched tones. For example, if this high efficiency point is at 1,000 cycles, all tones and overtones about two octaves above middle C will be greatly over-emphasized.

CASUAL TRIAL MAY BE DECEIVING

This will cause an impression of extreme loudness when the instrument is given a casual trial. On account of the inefficiency at higher and lower frequencies, however, the real effectiveness of the instrument —its intelligibility, which depends so largely on its reproduction of the higher pitched tones—may not be equal to the intelligibility of one which seems weaker but has a good average efficiency for all sounds and over-emphasizes none.

It seems reasonable that what the deafened person should consider in the selection of a hearing aid is the ability to understand the largest proportion of what is said to him. No normal hearing person would sacrifice the smallest fraction of his understanding of speech in order to decrease the unpleasantness of the noises to which he has to listen.

The measure of the "understandability" or intelligibility of speech, as heard by means of an electrical transmission system, is commonly spoken of by telephone engineers as the articulation of the system. Engineers at the Bell Telephone Laboratories have found out, through their years of investigation of the communication of speech, that the high frequencies are very important in getting good articulation. Certain tests with people of normal hearing have shown that an articulation as high as 98 per cent may be obtained in direct speech transmitted through air.

The same tests made by means of a practically perfect electrical transmission system which will transmit all frequencies up to 5,500 cycles per second gave an articulation of 96½ per cent. Similar tests made with the electrical system so arranged as to transmit all frequencies up to 3,770 cycles per second but not transmitting sounds of higher frequencies, gave an articulation of 87½ per cent. Further tests made with the electrical system so arranged as to transmit all frequencies up to 1,950 cycles per second, but no higher frequencies, gave an articulation of only 73 per cent. Additional tests made with the electrical system arranged to transmit all frequencies *above* 1,500 cycles per second but none below that frequency, gave an articulation of 75 per cent.

HIGH FREQUENCIES IMPORTANT

In other words, the intelligibility of speech over any transmission system is largely dependent upon the faithful reproduction of high frequencies, regardless of whether the system in question is a speaking tube, an electrical hearing aid, or a trans-Atlantic radio telephone system. It seems clear, therefore, that the deafened individual should use some method of articulation or intelligibility testing in selecting a hearing aid, rather than simply putting on several and taking the one that "sounds best."

There are several methods of carrying out such tests, but most of them are only adapted to laboratory use. There is, however, one rather simple method by which tests can be made at home, without special training or apparatus.

This method employs the Bell Telephone Laboratories' Intelligibility Lists, a number of which are reproduced in this booklet.

Each list consists of fifty simple sentences, such as the following:

The sun is many times larger than the earth.
Thanksgiving Day comes in November.
A mountain is higher than a hill.
Olive oil is produced in Italy.
Water will extinguish most fires.

A list is chosen at random for each hearing aid to be tested. The test should be conducted in a large room, well furnished with plenty of rugs and upholstered furniture, so as to avoid echoes and reverberation. A person with normal hearing should read the sentences while the person testing the hearing aids listens and repeats the exact words of each sentence to show that he has understood it accurately. The number of sentences correctly repeated is a measure of the efficiency of the hearing aid under test for the particular person using it in the test. In making comparative tests, it is important to make successive tests with the reader and the listener in the same positions. It is also important that the opportunity for lip reading be identical in each case. Either it should be entirely eliminated, or else it should be deliberately made easy. It is usually preferable to allow the eyes to help the ears, since the hearing aid is normally used under such conditions.

These tests are not designed to determine the best hearing aid; they are designed to determine the best aid as applied to a particular ear. Your friend should not choose his hearing aid on the basis of your test. He should make his own test and select the one with which he understands most, which may or may not be the one that suited you best.

A few words of caution may not be amiss here. If you have long been accustomed to a certain instrument, you should practise considerably with a strange instrument before testing it, so as to be sure that you are giving the instrument an "even break."

Slight differences between two instruments are not significant unless you find that the difference is consistently repeated on making repeated tests. It is im-

portant not to use the same list twice, since memory affects will invalidate the results.

The tests are also convenient for determining how much benefit is obtained from the use of a hearing aid. Many partially deafened people do not realize how much more easily they hear with an electrical aid than without it, nor do they appreciate how much of an effort their friends have to make in order to talk to them. Articulation tests made with and without a hearing aid but under otherwise identical conditions are often startlingly illuminating on the subject.

Whether you go through these tests or not, at least do yourself (and the friends who talk to you) the favor of trying to choose your next hearing aid, not merely as a device to make pleasant noises, but rather as an instrument for making speech intelligible.

For your convenience several of the Bell Telephone Laboratories' Intelligibility Lists are reproduced on the following pages.

INTELLIGIBILITY LIST 1

1. John D. Rockefeller is a prominent millionaire.
2. The sun is many times larger than the earth.
3. Flagpoles are usually protected by lightning rods.
4. Bananas grow on the banana tree.
5. The century plant blooms every hundred years.
6. The bottom of the ocean is composed mostly of mud.
7. A mountain is higher than a hill.
8. Exercise is good for the health.
9. The native Hollander wears wooden shoes.
10. Electricity is put to many uses.
11. Air escapes from a tire when it is punctured.
12. The West raises more grain than the East.
13. Indians are congregated on Reservations.
14. Thomas Edison invented the electric light.
15. Ohio has no seacoast.
16. Automobiles are exported from this country.
17. A corked bottle floats because of the imprisoned air.
18. Copper is a good conductor of electricity.
19. Indians were afraid of firearms because of the noise.
20. Astronomy is the study of the stars.
21. Magazine pages are held together by thread.
22. Bananas grow in large bunches.
23. President Roosevelt went to South Africa.
24. Covers protect the pages of books.
25. The Indians used bows and arrows in warfare.
26. Milk turns sour in warm weather.
27. Many streets in New York have Dutch names.
28. France aided us in the Revolutionary War.
29. Licorice is used for coughs and colds.
30. The Cherokees were a famous Indian tribe.
31. Soap is made principally of fat.
32. Icebergs are dangerous to ships.
33. Robert Fulton invented the steam boat.
34. The oak is taller than the apple tree.
35. Missionaries are sent to China.
36. Men's collars are usually made of linen.
37. Ancient castles were surrounded by moats.
38. Awnings are used to keep out the sunshine.
39. Dates grow on the date palm tree.
40. Sugar is manufactured from sugar cane.
41. Washington is called the Father of his country.
42. Three inches is one fourth of a foot.
43. Graphite is used to make lead pencils.
44. A key is used to unlock a door.
45. Policemen wear blue uniforms.
46. Cattle live on vegetation.
47. Most people require eight hours of sleep.
48. Boston is noted for its baked beans.
49. New Hampshire is a New England state.
50. The wick is an important part of a lamp.

INTELLIGIBILITY LIST 2

1. The compass is used in navigation.
2. The horse is fed on oats.
3. The Quakers settled in Pennsylvania.
4. The sails of a ship are made from canvas.
5. Moths are attracted to bright lights.
6. Watch springs are made from steel.
7. Ancient castles were surrounded by moats.
8. Ranching is carried on in the West.
9. Thanksgiving Day comes in November.
10. The Statue of Liberty is in New York harbor.
11. Screens are used to keep out flies.
12. A grapefruit is much larger than a grape.
13. A pump is used to draw water from a well.
14. Lincoln read the Proclamation of Emancipation.
15. Indians used feathers as a head dress.
16. The Hudson empties into the Atlantic Ocean.
17. The four leaf clover is comparatively rare.
18. An airplane travels faster than a locomotive.
19. A plumber is called when a pipe bursts.
20. Elephants do the heavy work in India.
21. Mosquitoes sometimes carry disease.
22. Edward VIII is the present king of England.
23. Walking uphill is strenuous exercise.
24. The soles of shoes are sewed on.
25. The mower is used to cut lawns.
26. The President lives in Washington.
27. The peacock has brilliant plumage.
28. Longfellow was an eminent American poet.
29. Rice grows in swampy ground.
30. People once thought the earth was flat.
31. The sky becomes dark before a thunderstorm.
32. Tractors are replacing horses on farms.
33. Spies are shot when caught by the enemy.
34. The useful animal in Arabia is the camel.
35. Canada and Mexico border the United States.
36. Opium is extracted from the poppy.
37. George Washington lived at Mt. Vernon.
38. People sleep during the night.
39. Alaska belongs to the United States.
40. The days are longer in the Summer.
41. A poultry farmer raises chickens.
42. The Alps are situated in Switzerland.
43. Woodrow Wilson was born in Virginia.
44. Marble is taken away from a quarry.
45. February is the month following January.
46. The banks of Newfoundland are famous for fishing.
47. Food is kept on ice in the summer time.
48. A row boat is propelled by oars.
49. Wax is used to make candles.
50. Grand Central Station is in New York City.

INTELLIGIBILITY LIST 3

1. The rhubarb plant is used for food.
2. New York is larger than Boston.
3. Roots are necessary to a tree.

4. Fountain pens are made of rubber.
5. Food is kept on ice in summer.
6. Disinfectants are used on wounds.
7. A row boat is propelled by oars.
8. Butter is churned from cream.
9. Diamonds are more precious than rhinestones.
10. The city is noisier than the country.
11. Wax is used in manufacturing candles.
12. An automobile has more wheels than a bicycle.
13. Water always runs downhill.
14. The Hudson River is salt water.
15. We have five fingers on each hand.
16. Glass is made from sand.
17. A thermometer is used for measuring temperature.
18. Japanese lanterns are made of paper.
19. Motor trucks have broad wheels.
20. There are four pints in two quarts.
21. Forts are usually built near harbors.
22. Fires can be lighted without matches.
23. The earth rotates around the sun.
24. The polar bear has white fur.
25. Vinegar is obtained from apple cider.
26. The chicken is a barnyard fowl.
27. There are sixty seconds in one minute.
28. Eggs may be boiled, fried or scrambled.
29. Automobiles are kept in garages.
30. The ape resembles man very closely.
31. Harvest time comes in the autumn.
32. It takes five days to cross the Atlantic Ocean.
33. Icebergs are found near Greenland.
34. Early frost usually ruins fruit.
35. Olive oil is produced in Italy.
36. Swimming is healthy exercise.
37. Water tanks are generally built high.
38. Furniture is made at Grand Rapids.
39. Iron is attracted by a magnet.
40. The eagle is engraved on the American dollar.
41. The zebra has black and white stripes.
42. A piano is played with the fingers.
43. Coral is found on the ocean bed.
44. Doors of public buildings should swing outward.
45. The Brooklyn Bridge is in New York.
46. Tall buildings are built with steel.
47. The rose bush is covered with thorns.
48. Ferns are found in the woods.
49. The farmer plows his fields in the spring.
50. Cotton is raised in the South.

INTELLIGIBILITY LIST 4

1. Iron is used for many things.
2. Bridges are built across rivers.
3. Cheese is imported from Holland.
4. Furnaces are used to heat houses.
5. Indians made moccasins from deer hide.
6. Explosives are used in mining.
7. Ships usually carry wireless apparatus.
8. Land is measured by surveying.
9. Spices are used for seasoning food.
10. The whale is the largest inhabitant of the ocean.
11. Prairies are seen in our Western States.
12. The Dutch settled in New York.
13. The maple is a common shade tree.
14. Dogs pull sleds in Alaska.
15. Botany is the study of plants.
16. Ships are repaired at a dry dock.
17. Rubber is used in automobile tires.
18. Some primitive people lived in cliff dwellings.
19. Italy is subject to many earthquakes.
20. Pigeons are used as messengers.
21. It is dangerous to touch a live wire.
22. Fire engines are usually painted red.
23. Tacks are used to hold down carpets.
24. Most business stops at five o'clock.
25. Indians used birch-bark for canoes.
26. Elephant tusks provide us with ivory.
27. The sky is blue on a clear day.
28. A baby bear is called a cub.
29. Water will extinguish most fires.
30. Electric light is preferable to gas.
31. Cuba supplies a large part of the world's sugar.
32. Alaska is noted for its gold mines.
33. Shoes are manufactured from leather.
34. Most food must be cooked before being eaten.
35. A sail boat is driven by the wind.
36. Owls can see best in the dark.
37. There are thirty-six inches in a yard.
38. Most fruits are ripe in the summer.
39. Ink is a liquid used for writing.
40. Fishermen use nets to catch fish.
41. Shakespeare wrote many plays.
42. Molasses is made from sugar cane.
43. Oranges are raised in Florida.
44. Immigrants land at Ellis Island.
45. Feathers are used to stuff pillows.
46. A bungalow is different from a house.
47. Rice is the chief food of the Chinese.
48. The Philippines are in the Pacific Ocean.
49. The Indians fought with tomahawks.
50. A tree is higher than a shrub.

INTELLIGIBILITY LIST 5

1. Stevenson was the author of "Treasure Island."
2. Large stations have information stands for the convenience of travelers.
3. A dentist uses gas to extract teeth without pain.
4. Kerosene is used as a fuel for oil stoves.
5. A pump is used to fill an automobile tire with air.
6. Asbestos is utilized to prevent fire.
7. Office doors are usually numbered.
8. The American Flag is often called Old Glory.
9. Expensive umbrellas are made of silk.
10. The wind makes snow pile up in high drifts.
11. Boston is the capital of Massachusetts.
12. Stores advertise their merchandise in the papers.
13. Sir Walter Scott was the author of "The Lady of the Lake."
15. Rabbits are fur-bearing animals.
16. West Point is a college for military training.
17. Sunshine makes fruit turn red.
18. Turning a ship's wheel steers the ship.
19. A vacuum cleaner cleans better than a broom.
20. The best perfume comes from France.
21. Policemen have brass buttons on their uniforms.
22. A clip is used to keep a fountain pen in the pocket.
23. The National Biscuit Company manufactures crackers.
24. The United States completed the Panama Canal.
25. Niagara Falls is a famous waterfall in New York State.
26. Teeth are filled to prevent further decay.
27. Thousands of stars can be seen through a telescope.
28. Wax is good for polishing hard wood floors.
29. Cultivated strawberries are larger than wild ones.
30. Paper clips are used to fasten papers together.

31. Ice interferes with ferryboat traffic in the winter.
32. The negro race has kinky hair.
33. The map of Italy resembles the shape of a boot.
34. High tide occurs twice a day.
36. Strong winds tear flags on high buildings.
37. The Declaration of Independence is commemorated on July Fourth.
38. The Metropolitan Museum of Art is located on Fifth Avenue.
39. London and New York are the largest cities in the world.
40. Leaves are on the trees in the summertime.
41. Rice is grown under water.
42. The product of five and fourteen is seventy.
43. An electric fan is of great benefit in hot weather.
44. President Wilson served two terms.
45. Broadway is called the "Great White Way."
46. The invention of the airplane has increased the speed of traveling.
47. Awnings keep houses cooler in hot weather.
48. Wool and beef come from sheep and cattle.
49. People paint iron to keep it from rusting.
50. Benjamin Franklin was a statesman and an inventor.

INTELLIGIBILITY LIST 6

1. Tar paper is used on roofs to keep the rain out.
2. Dynamite is used for blasting.
3. A submarine navigates under water.
4. Bulrushes grew in ancient Egypt.
5. Farmers bring vegetables to market in trucks.
6. A bottle can be filled with liquid by using a funnel.
7. There are no waiters in a cafeteria.
8. Vegetation in African jungles is very dense.
9. Charcoal can be used to start a coal fire.
10. A clock is used to tell time.
11. A cold in the head makes the hearing worse.
12. Indians fish through the ice in winter.
13. Dickens was the author of "David Copperfield."
14. Chocolate is used in making fudge.
15. Olives grow abundantly in Italy.
16. Tea and coffee are drunk throughout the world.
17. A time table indicates the arrival and the departure of trains.
18. The outer shell of a cocoanut is rough.
19. A man becomes of age in this country at twenty-one.
20. Z is the last letter in the alphabet.
21. Billiard balls are manufactured from ivory.
22. Violins and trombones are used in orchestras.
23. The Indians scalped their enemies.
24. Lumber is used for manufacturing furniture.
25. Caterpillars injure trees by eating the leaves.
26. Water sparkles when the sun shines on it.
27. Observation balloons were used during the war.
28. There is little plant life in deserts.
29. An elephant is larger than a lion.
30. The far North has six months of darkness.
31. A lawn mower is used for cutting grass.
32. Pneumonia is a disease of the lungs.
33. Poppies are grown from seeds.
34. Iron is much heavier than water.
35. Denver is west of New York.
36. Napoleon was a great military leader.
37. Gold is mined in California.
38. Leather is obtained from the hides of animals.
39. Oak leaves turn brown in the fall.
40. Steam heat is used in many homes.
41. Red is the color that signifies danger.
42. A cobbler repairs shoes.
43. The Indians travelled over the water in canoes.
44. A pine tree is taller than a rose bush.
45. Injured persons are taken to hospitals in ambulances.
46. Threshing separates the wheat from the chaff.
47. Light houses warn ships of rocks and shoals.
48. Cotton is an important product of the South.
49. A push button is used to ring a bell.
50. Swimming in salt water is invigorating.

INTELLIGIBILITY LIST 7

1. Hot water is better than cold for cleaning.
2. Iron ore is mined in the United States.
3. Carnegie donated many public libraries.
4. Our army is maintained for defensive purposes.
5. Eskimos make their clothing of fur.
6. Piano keys are made of ivory.
7. Plenty of sunshine is essential to good health.
8. San Francisco is a large city in California.
9. Dodge and Ford cars are made in Detroit.
10. A square has four sides.
11. Plants thrive in fertile soil.
12. A man can do heavier work than a woman.
13. The flowers of the tropics are brilliant in color.
14. Bunker Hill monument is located in Boston.
15. Boys play marbles in the spring.
16. The swallow builds a hanging nest.
17. Flour is made by grinding wheat.
18. Ice is put in refrigerators to keep them cool.
19. Stages of modern theatres are electrically lighted.
20. Windows are made of glass.
21. Fine weather is best for excursions.
22. Yeast is used to make bread rise.
23. Harbors are dredged to keep the channels clear.
24. Hickory wood makes good axe handles.
25. Spring is a pleasant season of the year.
26. Screws are used for fastening metal.
27. Rubber heels are used on men's shoes.
28. The owl catches mice at night.
29. Four years are required for a high school course.
30. The Mauretania is a large Atlantic steamer.
31. A whistle is used by a train as a warning.
32. Most of our coins are made of silver.
33. Baseball is more strenuous than fishing.
34. Webster composed a large dictionary.
35. A person who paints pictures is called an artist.
36. Wall paper is pasted to the walls.
37. Dew is found on the grass in the morning.
38. There are nine square feet in a square yard.
39. Fresh water freezes at thirty-two degrees.
40. Camels can go a long time without water.
41. This country can be crossed by train, car or airplane.
42. Lobsters are caught off the coast of Maine.
43. Rubbers keep the feet dry in rainy weather.
44. Corn was the principal food of the Indians.
45. Electrical storms are common in summer.
46. Aluminum is employed for making cooking utensils.
47. The hickory tree bears nuts in the fall.
48. Food can be cooked over an open fire.
49. Football is a popular sport in the autumn.
50. Olive oil is yellow in color.

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